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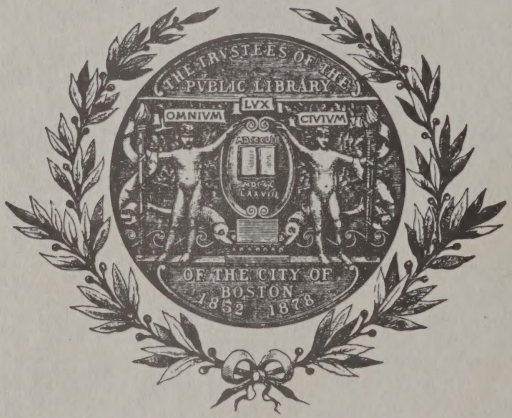
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A. A. ZIMMERMAN J. MCDERMOTT T. A. ZIMMERMAN

A. A. ZIMMERMAN.

—*—

Arthur Augustus Zimmerman is the son of Mr. T. A. Zimmerman, a wealthy real estate owner of Manasquan, New Jersey, in the United States of America. Arthur was born at Camden, in the same State, in 1869, but at an early age moved to Manasquan. He was educated at the Freehold Institute and the Military School, at which latter he spent two years. On June 1st, 1886, he entered the offices of his brother-in-law, Mr. Joseph McDermott, the principal real estate lawyer—or as we should say in England conveyancing counsel or barrister—of Freehold the County Town, and has been in his employ ever since.

At an early age Arthur showed great proficiency in Athletic Sports, in which he was ever encouraged and assisted by his father and Mr. McDermott, both thorough sportsmen. In 1888 and 1889, Arthur was the best jumper in his County, carrying off first prizes for standing long, standing high, and three jumps. In October, 1889, he made his appearance as a racing cyclist, and captured first prize at the Queen's County L.I. Sports, in the novices' race. This started him on the path, where up to the end of 1890 he won 45 first prizes, 18 second, three third, and one fourth. Till August, 1891 he rode an ordinary, his mount being a solid tired 'Star,' a bicycle with a small wheel in front and a large

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one behind, geared to 54-in. only, and driven by lever action. During 1891 he came to the conclusion that he must come down from the ordinary, and take to a pneumatic safety, and in August of that year after trying a number he made his selection, upon which on September 8th, 1891, at Hartford, he won the half-mile L.A.W. Safety Championship, riding the last quarter-mile in 29⅘ seconds, world's record; and on the 10th, at Springfield, he won a half-mile handicap from scratch in the world's record time of 1 minute 6⅘ seconds. His score for 1891 was 52 firsts, 10 seconds, three thirds, and a number of records.

Early in 1892 the American papers stated that Mr. Zimmerman thought of coming to England for our championships, whereupon Mr. G. Lacy Hillier, Hon. Sec. of the London County Cycling and Athletic Club, Ltd., sent through the New York Athletic—Mr. Zimmerman's—Club, a warm invitation for him to make their track at Herne Hill his head-quarters, and offering to assist him in every way possible. And here, at Mr. Zimmerman's request and on his behalf, I take pleasure in again acknowledging his indebtedness to Mr. Hillier for much good advice and assistance, and generally to the other members of the club for their kindness to Mr. Zimmerman during his stay in England. He arrived here on February 15th, 1892, and I was much concerned when I met him on the following day, to find that he had already in our treacherous climate contracted a cold and cough, which he did not shake off for some weeks. This undoubtedly kept him from getting into condition earlier than he otherwise would. In America he takes longer than anyone else getting fit, but is recompensed by being able to do more racing and remain longer in good condition than others, and in this respect I note that at Asbury Park, on August 29th, 1891, he rode in seven races, winning four and getting second prizes in the three others, which I believe, is about world's record for a day's racing. 'Zimmy' as he is called in England, and 'Zimmie' in America, made his first appearance on the English path at Brighton, on Easter Monday, April 18th, 1892, and only managed to get a second prize. His friends did not expect anything better

for he was far from fit, and the weather was abominable, windy, cold and snowing; such a contrast to the blazing hot weather in which most of the racing takes place in America. Not until May 19th did he score his first win, but during all this time, although nobody here except myself seemed to believe he would prove to be the best man in England, he was winning golden opinions everywhere by his unassuming manners, and the good tempered way in which he bore defeat with the same quiet smile as when afterwards victorious.

I saw him ride on three occasions only in England, and prior to the first of these on April 30th, I had notified the press that he did not expect to win, and that he was riding for the purpose of getting used to our men and tracks. On the two other occasions I went expressly to see him win, but was disappointed in the 25 miles Championship of England because he fell through the crowded condition of the track. On the last occasion, in the one and five miles Championships he, to use the words of one of his principal competitors, 'made common hacks of the best in England,' and yet, strange to say, just before the races commenced the English and Irish riders present looked upon Zimmerman as their least dangerous opponent. The winning of the 50 miles championship on July 7th closed his season's racing in England.

Zimmy's remarkable successes here were continued in America, where I saw him ride much faster. His most important wins were the world's record race at Springfield,—the prize consisted of a carriage and pair of horses worth £200 ($1,000),—and the New York Metropolitan Championship. He also rode the fastest times ever made in races, viz., 1 minute 1⅘ seconds for half-a-mile, standing start, and 27 seconds for a quarter-mile, flying start.

Zimmy's 1892 record excels all others. He started in 100 races—34 handicaps, and 66 scratch races; won 75 first prizes, 19 seconds, and five thirds, value $8,800 (£1,760), besides making numerous records on seventeen different occasions. Having defeated all comers in England, Germany, the United States, and Canada, during 1892, he has been proclaimed

by the whole American Press, and most of the British, 'Champion of the World,' a title to which no one has ever had so good a right, or travelled to so many countries to win, and one which I think he is likely to retain for some time.

The following are I believe the secrets of Zimmy's success.

1—A grand constitution, with a physique that is I think perfection for a racing cyclist, viz., height about 6 feet, slim body, with long, large, and very powerful legs. When out of training he weighs over 13-st. (182-lbs.), but rides 11-st. 7-lbs. (161-lbs.), and often much less, with apparently nothing but bone and sinew left.

2—A happy home, with congenial surroundings. I have been around the world five times and resided in several countries, but in only one place, San Rafael, near San Francisco have I ever known such a delightful feeling of perfect repose in the air of the place as I did on each of my two visits to Mr. Zimmerman's home at Manasquan, once famous among the Indians. 'Tired nature's sweet restorer, balmy sleep,' seemed doubly recuperative there, and certainly Zimmy benefits by it to a remarkable extent.

3—A calm equable temperament, with a firm will that holds Zimmy aloof from all the seductions of a good time and 'jolly good fellows' while he is training and racing, and keeps him on the course he has planned, with eyes steadily fixed on the object in view,—to be first across the tape every time.

4—A father who shares all his sporting aspirations, and a brother-in-law who for years has had for Zimmy more than the affection of a brother, who loves him as his own son, who has encouraged and trained Zimmy from the first in all his great encounters, and who has neither spared time nor money to aid Zimmy in attaining success, which he enjoys as much as if it were his own. That Mr. McDermott has contributed in the largest measure to that success I have no doubt, for there is a sympathetic feeling between him and Zimmy, such as we can imagine existed between David and Jonathan.

Mr. McDermott instead of spending his vacations in repose accompanies Zimmy to race meets as his trainer and literally rubs success into him. Last year when failure attended Zimmy's efforts on this side longer than was expected, Mr. McDermott left his business in charge of his assistants, and taking his wife and child, came to England to ensure success. True, Zimmy had scored before he arrived, but the excellent moral effect was noticeable, and thenceforth there was nothing but victory.

F.B.

FAMOUS PATH RIDERS

OF THE WORLD.

It is to be regretted that time and opportunity have prevented a more perfect collection and description being made of photographs of racing men of the world. There is, however, one consolation, it is the largest up to date.

The English Photographs are those selected by the readers of *Cycling* (with the addition of Hillier and Bradbury) as the 12 best riders on the English path during 1892, and by them placed in the following order:

Zimmerman first with 3,780 votes (although many voters left him out of their lists altogether); Harris, 3,672 votes; Edwards, 2,780; Schofield, 2,733; Osmond, 2,151; Adams, 1,806; Good, 1,615; Ede, 1,325; Lambley, 1,095; Leitch, 984; Shorland, 847; Fowler, 685.

I do not altogether agree with the selections made by *Cycling's* readers, and certainly R. J. Mecredy and Arthur du Cros, both Irish Champions, should be among them. Arthur and his brother Harvey are the best known of seven brothers, who with their father form the most famous athletic family in the three kingdoms, as noted for brains as muscle.

ADAMS, JOHN HENRY, born 1863, in England, is 6-ft. 1½-in. high. He held both bicycle and tricycle 24 hours' records in 1885, has had one of the longest and most successful careers upon the English road and path, and is apparently far from becoming a "has been." He won the 1, 5, and 50 miles English ordinary championships for 1892, besides a number of important safety races.

BERLO, P. J., of Boston, Massachusetts, is 26 years old, 5-ft. 9-in. high, weighs 10-st. 10 (150-lbs.), began racing in 1886, and is a flyer of the first order, game to the end.

BINNS, HERBERT VICTOR, born in Co. Donegal, Ireland, 28th October, 1868, began cycling at the age of 13, and racing in 1887. He is a clever mechanic, an all-round athlete, and an excellent musician. His forte is long distance riding. In 1890 he held all Irish records from 25 to 50 miles. He now holds the Irish 12 hours' (179 miles) and other records.

BOWMAN, SYDNEY B., of New Jersey, began racing in 1888, is a vegetarian, a great friend of "Zimmy," and the second best rider in his state.

CANTU, LUIGI, was born at Milan, in 1869, and began racing in 1890. Out of 98 events in which he rode, he won 49 first, 23 second, and 11 third prizes. His 1892 wins include the championship of the Haut Rhone, and the long distance championship of Italy.

CELLIERS, J. D. was born at Kimberley, South Africa, on July 11th, 1872, and began racing in 1890. During 1892, out of 35 events, he won 22 firsts, 7 seconds, and 4 thirds, including the 3 miles championship, and record for South Africa.

DU CROS, ARTHUR, born 1871, at Dublin, began cycling in 1880, and racing in 1886, in which year, and 1887, he was second on the list of Irish prize winners. In 1889 he won 6 Irish championships and continues to race with great success.

DU CROS, HARVEY, brother of the above, and now located in New York, has been very successful during the little time devoted by him to racing

EDE, ROBERT LANGLEY, was born at Thornton Heath, Surrey, in 1869, and began riding a 40-in. ordinary in 1884. He is a remarkable record breaker on path and road; won the 1892 English championship for 25 miles, and is known as "the pocket Hercules." He weighs but 8-st. (112-lbs.)

EDWARDS, ALFRED CHARLES, was born in London, December 15th, 1871, and has been very successful since he commenced racing in 1889. His 1892 prizes, including the championship of the London centre, and running second to Zimmerman in the one mile championship of England, comprise 39 firsts, 12 seconds, and 5 thirds.

FRIEDRICH, WILHELM, the long distance champion of Austria for 1892, was born at Dusseldorf on the 4th October, 1871, and made his debut on the path at Cologne in 1889.

FOWLER, MORRIS B., aged 22, began racing in 1890, and has had great success whenever his studies have permitted him to train and race systematically.

GLADERY, WM. MC, was born at Belfast on 23rd July, 1870; learned to ride a boneshaker in 1881, and began racing in 1889. He weighs 12-st., (168-lbs.), and is 6-ft. in height. He holds the 1, 5, and 10 miles championships of Ulster, also most of the local road records.

HARRIS, ALBERT WALTER ALLEN, of Leicester, was born at Birmingham in 1874, and is for his age, the most successful rider on the English path. He won more prizes during 1892, than any other Englishman, and will probably be top scorer in 1893.

HILLIER, GEORGE LACY, born June 6th, 1856, is 5-ft. 11-in. high, and weighs over 13-st., (182-lbs.) *The Cyclist Christmas Number*, for 1889, says 'one of the best known figures in cycling. Is passionately fond of judging races, and was amateur champion of bicycle and tricycle at all distances in 1881. Is good at running, walking, and swimming, a fluent and able speaker and ready writer, holding strong views, and a stronger will to back them up. Is on the London Stock Exchange and is an able and energetic man.' Every word of that description fits him to-day. He will be better known to Americans as Zimmerman's English Mentor in 1892. I am not sure that 'Oh! yes, he is a judge, and a good judge too' was not written in G.L.H.'s praise, for I think most cyclists will admit that

> For a judge of a race, or a judge of one's pace,
> G.L.H. is the best you can get in each case.

KILLACKY, JOHN, of Forfar, Scotland, has won during his four years on the path over 130 prizes, including the 1, 5, and 10 miles S.C.U. Central District Championships for 1892.

KENNA, P., of Limerick, began racing in 1889, at the age of 17, and has since won over 100 prizes, including the 5 and 50 miles championships of Ireland for 1892.

LACAILLE, DONALD E., is a native of Scotland, was born on the 12th Dec., 1870, and won his first race so lately as April, 1892. During the season he won the 10 miles Scottish Championship, with many other important events, besides establishing a number of Scottish Records.

LAMBLEY, ULICK L., was born at Chelsea in 1870, and commenced racing in 1889, winning his first race. In 1891 he won the 5 miles ordinary N.C.U. Championship, and has been very successful since, whenever business has permitted him to train.

LEHR, AUGUST, is the champion of Germany, but he failed to meet Zimmerman, at Berlin, in June, 1892, and was much chaffed about it by the *Radfahr-Humor* the best of German cycling journals.

LEITCH, ERNEST, born in London, August 6th, 1870, and has ridden with great success since 1890.

MAC ADAM, S. of Limerick, was 50 miles Irish champion in 1891, and has won a great many prizes in the most strongly contested races in Ireland.

McLAREN, JAMES, born at Stenhousemuir, Stirlingshire, 16th January, 1872. He began cycling in 1888, and has ridden with great success, during 1892 alone winning 52 prizes—33 firsts, 12 seconds, and 7 thirds.

MECREDY, RICHARD JAMES, born 18th May, 1861, at Balinasloe, Co. Galway. Began work in that grand school for business men a law office, and took to journalism, now being editor and part owner of the *Irish Cyclist*, and one of the original directors of the Dunlop Tire Co. He commenced cycling in 1878, and has I think won more National Championships than any other rider. All the four English Safety Championships for 1, 5, 25, and 50 miles were won by him in 1890.

NAYLOR, J. H., of Golden Ball, County Dublin, was born in 1870, and began racing in 1887, but like most Irish riders has won more great road than path races. During 1892 he scored heavily in the latter, including the 25 miles championship of Ireland.

OSMOND, FREDERICK JOHN, born at Long Sutton, Lincolnshire, in 1867, commenced racing in 1886 with great success, since which time up till 1891 he was the most prominent man on the English path having won one or more English Championships every year. In 1890 he won the four confined to riders of the ordinary bicycle. He was the first man to ride a mile in 2m. 16s., and 23 miles 1260 yards in an hour.

PEAT, S. G., of Glasgow, only began cycling in 1892, and during that year won 43 prizes, principally firsts, including the 12 hours Scottish Road Race.

SCHOFIELD, J. W., of Birmingham, is 21 years of age. In 1892 he won 25 firsts, 5 seconds, and 2 thirds, and made English safety records for $\frac{1}{4}$-mile flying, and $\frac{1}{4}$, $\frac{1}{2}$, and $\frac{3}{4}$ standing.

CHORLAND, FRANK WILLIAM, born at Orton, near Northampton, 29th September, 1871, began riding a geared facile in 1888, and a geared front driver in 1892. Has made most of his successes on the road, but is a grand long distance path rider, his most famous win being the 24 hours at Herne Hill on July 20th, 1892, when he covered 413 miles 1615 yards. He now rides a safety upon which I expect he will be still more successful.

TAXIS, W. W., was born at Philadelphia 24th December, 1871, is 6-ft. 1½-in. high, and weighs 12-st. 2-lb. (170-lbs.); he has won 158 firsts, 61 seconds, and 25 thirds since he commenced racing in 1887.

TAYLOR, GEORGE F., of Ipswich, Mass., was born on January 3rd, 1871, is 5-ft. 11-in. high, and rides at 12-st. 1-lb. (169-lbs.). He was the first man to reduce the mile record to 2-min. 11-sec.

TORRANCE, JOHN GEBBIE, was born in Ayrshire, Scotland, in 1869, and began racing in 1889. Business has prevented him from following it closely, but he has won about 80 prizes.

VOGT, R. A., was born at Glasgow, February 18th, 1869; began racing in 1888 on an ordinary, and took to the safety in 1891. He has won about 150 prizes, including all the Scottish Championships for 1890, 1891, and 1892, and holds all Scottish records from ¼-mile to 50 miles.

WAYTE, JAMES BENJAMIN, of Dublin, is an engineer, and was born in 1870. He began cycling in 1888, and made his mark as a famous road rider until 1892, when he won 25 path prizes and also broke the 20 miles road record for Ireland.

WINDLE, W. W., generally considered to be the fastest rider in America next to Zimmerman. He holds the one mile and other world's records.

For much of the above information I am indebted to the "Cyclists' Annual."

F.B.

AMERICA.

H. B. ARNOLD

SIDNEY. B. BOWMAN.

DANIEL. J. CANARY.

P. J. BERLO.

C. W. DORNTAGE.

FRED. C. GRAVES.

J. P. BLISS.

GEO. M. HENDEE.

AMERICA.

A.E.LUMSDEN.

Wm.F.MURPHY.

L.D.(Birdie)MUNGER.

E.A.McDUFFIE.

HOYLAND SMITH.

E.A.NELSON.

W.A.RHODES.

GEO.C.SMITH.

AMERICA.

H.W. TAXIS.

HARRY C. WHEELER.

N.H. VAN SICKLEN.

GEO. F. TAYLOR.

GEO M. WORDEN.

W.W. WINDLE.

H.C. TYLER.

"ZIMMIE."

ENGLAND.

A. C. EDWARDS.

A. W. HARRIS.

GEO LACY HILLIER.

FRANK SHORLAND.

JOHNNY ADAMS.

FREDDY OSMOND.

M. B. FOWLER.

U. L. LAMBLEY.

ENGLAND.

F.G.BRADBURY.

A.E.GOOD.

R.L.EDE.

J.W.SCHOFIELD.

E. LEITCH.

CANADA.

G. MARSHALL WELLS.

IRELAND.

STANNARD McADAM.

A. DU CROS.

W. McGLADERY.

J.B. WAYTE.

P.J. KENNA.

J.H. NAYLOR.

R.J. MECREDY.

H. DU CROS.

H.V. BINNS.

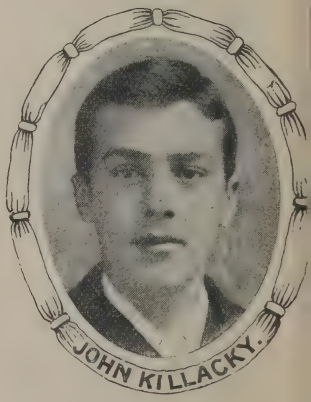
SCOTLAND.

DONALD. E. LACAILLE.

J. McLAREN.

Wm DUNCAN.

S.G.PEAT.


JOHN KILLACKY.

R.A.VOGT.

J. G. TORRANCE.

J.M. DUNCAN.

GERMANY.

OTTO BRAMBER.

AUGUST LEHR.

PAUL NAUMANN.

ALEX VERHEYEN.

CARL HESS.

S. AFRICA. ITALY. AUSTRIA.

J. D. CELLIERS.

LUIGI CANTU.

WILHELM FRIEDRICH.

WORLD'S RECORDS.

AMERICAN RECORDS.

From the American *Referee,* Christmas, 1892.

STANDING START—IN COMPETITION.

MILES.			
¼—	31 1-5,	Geo. C. Smith,	Hartford, Sept. 6, 1892.
½—	1 01 4-5,	A. A. Zimmerman,	" "
¾—	1 41 1-5,	Geo. F. Taylor,	Springfield, Sept. 15, 1892.
1—	2 15 2-5,	"	" "
2—	4 51	A. A. Zimmerman,	" Sept. 13, 1892.
3—	7 38 3-5,	L. D. Munger,	Evansville, Ind., Oct. 6, 1892.
4—	10 13 1-5,	"	" "
5—	12 36 3-5,	A. E. Lumsden,	" "
6—	18 40 2-5,	C. F. Seeley,	New York, July 9, 1892.
7—	21 45 2-5,	Carl Hess,	" "
8—	24 45 3-5,	Hoyland Smith,	" "
9—	28 03 3-5,	R. W. Steves,	" "
10—	30 40 2-5,	P. J. Berlo,	" "

STANDING START—AGAINST TIME.

¼—	32 1-5,	Geo. F. Taylor,	July 5th, 1892.
½—	1 03 3-5,	W. W. Windle,	Springfield, Oct. 8, 1892.
¾—	1 34	"	" "
1—	2 05 3-5,	"	" Oct. 7, 1892.
2—	4 28 3-5,	"	" Sept. 30, 1892.
3—	7 04 3-5,	"	" Sept. 29, 1892.
4—	9 26 3-5,	"	" "
5—	11 41	"	" "

Hoyland Smith, 6 to 25 miles, Hartford, July 5, 1892.

6—15 11 1-5	10—25 35 2-5	14—36 14 3-5	18—46 22 2-5	22—56 20 4-5
7—17 49 3-5	11—28 15	15—38 46 2-5	19—48 53	23—58 52 4-5
8—20 27	12—30 52 2-5	16—41 14 1-5	20—51 18 2-5	24—61 29 2-5
9—23 04 4-5	13—33 33 3-5	17—43 50 1-5	21—53 51 4-5	25—64 05 1-5

F. E. Spooner, 30 to 375 miles, Chicago, July 8 and 9, 1892.

30—1 31 41	120— 7 02 36	210—12 24 00	300—18 29 38
35—1 50 21	125— 7 21 15	215—12 42 43	305—19 11 23
40—2 06 07	130— 7 39 19	220—13 03 14	310—19 31 40
45—2 25 30	135— 7 57 17	225—13 21 53	315—19 51 56
50—3 43 56	140— 8 15 32	230—13 42 53	320—20 12 03
55—3 02 33	145— 8 33 50	235—14 21 32	325—20 31 38
60—3 20 43	150— 8 53 08	240—14 41 00	330—20 49 37
65—3 49 28	155— 9 09 52	245—15 09 21	335—21 08 17
70—3 57 47	160— 9 27 07	250—15 27 22	340—21 28 17
75—4 15 04	165— 9 45 04	255—15 35 37	345—21 48 23
80—4 33 40	170—10 03 01	260—15 52 45	350—22 09 17
85—4 51 40	175—10 21 01	265—16 10 27	355—22 31 56
90—5 09 30	180—10 38 33	270—16 27 55	360—22 53 38
95—5 27 46	185—10 54 56	275—16 46 37	365—23 14 20
100—5 45 19	190—11 12 08	280—17 02 22	370—23 36 56
105—6 04 45	195—11 29 29	285—17 28 00	375—24 00 22
110—6 25 10	200—11 47 15	290—17 49 39	
115—6 44 09	205—12 05 56	295—18 09 25	

FLYING START—AGAINST TIME.

¼—0 28 2-5,	H. C. Tyler,	Springfield, July 14, 1892.
½—0 57 4-5,	W. W. Windle,	" Oct. 7, 1892.
¾—1 30 4-5,	"	" "
1—2 02 3-5,	"	" "

FLYING START—IN COMPETITION.

¼—0 27 A. A. Zimmerman, Hartford, Sept. 6, 1892.

RECORDS, AGAINST TIME, PACED BY RUNNING HORSES.

¼—0 26 1-5, John S Johnson, Independence, Ia., Sept. 21, 1892
½—0 55 1-2, " " Sept. 15, 1892
¾—1 28 1-2, " " Sept. 22, 1892
1—1 56 3-5, " " "

ENGLISH RECORDS.

(Compiled for the *Northern Wheeler* by E. A. POWELL.)

BRITISH AMATEUR SAFETY RECORDS.

*¼—0 0 29 2-5, J. W. Schofield, Putney, Oct. 26, 1892.
¼—0 0 31 1-5, " " Oct. 20, 1892
½—0 1 02 " " "
¾—0 1 38 2-5, " " Oct. 26, 1892
1—0 2 12 3-5, A. W. Harris, Herne Hill, Sept. 17, 1892
2—0 4 49 4-5, M. B. Fowler, " Sept. 26, 1892
3—0 7 16 2-5, " " "
4—0 9 47 1-5, F. J. Osmond, " July 15 1891
5—0 12 16 1-5, M. B. Fowler, " Sept. 26, 1892

F. J. Osmond, 6 to 14 miles, Herne Hill, July 15, 1891.

6—0 14 43 4-5 9—0 22 20 2-5 11—0 27 23 13—0 32 27 3-5
7—0 17 16 1-5 10—0 24 50 1-5 12—0 29 53 4-5 14—0 35 03
8—0 19 47 2-5

R. L. Ede, 15 to 24 miles, Herne Hill, May 24, 1892.

15—0 37 32 1-5 18—0 45 05 4-5 21—0 52 43 4-5 23—0 57 50 4-5
16—0 40 03 1-5 19—0 47 39 4-5 22—0 55 20 4-5 24—1 00 21 1-5
17—0 42 35 1-5 20—0 50 13 3-5
25—1 05 55 2-5, R. L. Ede, Herne Hill, July 14, 1891.

F. J. Osmond, 26 to 41 miles, Herne Hill, Sept. 15, 1892.

26—1 08 36 1-5 30—1 19 07 2-5 34—1 29 56 3-5 38—1 41 21 4-5
27—1 11 13 2-5 31—1 21 44 2-5 35—1 32 40 2-5 39—1 44 14 4-5
28—1 13 48 2-5 32—1 24 24 2-5 36—1 35 27 2-5 40—1 47 16 1-5
29—1 16 29 4-5 33—1 27 11 3-5 37—1 38 25 3-5 41—1 50 21 2-5

* Flying start.

R. L. Ede, 42 to 63 miles, Herne Hill, July 14, 1891.

42—1 53 27 2-5 48—2 11 00 2-5 54—2 29 19 2-5 59—2 45 35
43—1 56 15 1-5 49—2 14 02 55—2 32 20 4-5 60—2 49 09 1-5
44—1 59 14 4-5 50—2 17 01 4-5 56—2 35 24 1-5 61—2 52 52 2-5
45—2 02 12 3-5 51—2 20 08 1-5 57—2 38 32 2-5 62—2 56 49 3 5
46—2 05 11 3-5 52—2 23 08 1-5 58—2 42 04 1-5 63—2 59 53 3-5
47—2 08 05 1-5 53—2 26 11 2-5

J. H. Adams, 64 to 100 miles, Herne Hill, Aug. 13, 1892.

64—3 06 23 1-5 74—3 39 55 83—4 09 06 1-5 92—4 39 17 4-5
65—3 09 37 1-5 75—3 43 21 4-5 84—4 12 29 2-5 93—4 42 15 4-5
66—3 12 58 3-5 76—3 46 39 2-5 85—4 16 02 4-5 94—4 45 23 2-5
67—3 16 16 4-5 77—3 50 01 86—4 19 43 2-5 95—4 48 26 2-5
68—3 19 36 1-5 78—3 53 20 1-5 87—4 23 11 3-5 96—4 51 17 4-5
69—3 22 51 1-5 79—3 56 24 4-5 88—4 26 37 2-5 97—4 54 12 4-5
70—3 26 08 1-5 80—3 59 26 3-5 89—4 30 01 1-5 98—4 57 27 3-5
71—3 29 30 4-5 81—4 02 33 2-5 90—4 33 25 2-5 99—5 01 02 1-5
72—3 22 55 4-5 82—4 05 48 91—4 36 37 1-5 100—5 04 18 3-5
73—3 36 29 1-5

*F. W. Shorland, 101 to 413 miles, Herne Hill, July 23, 1892.

101—5 13 18 4-5 190—10 17 27 3-5 280—15 56 18 3-5 370—21 26 44 2-5
110—5 45 47 3-5 200—10 49 32 2-5 290—16 34 48 380—22 00 58 4-5
120—6 23 03 4-5 210—11 25 26 1-5 300—17 10 18 390—22 41 51
130—6 56 10 3-5 220—11 59 46 1-5 310—17 48 49 2-5 400—23 14 07 1-5
140—7 29 12 1-5 230—12 51 40 4-5 320—18 20 47 4-5 410—23 48 27 4-5
150—8 03 08 4-5 240—13 30 56 4-5 330—18 59 21 411—23 51 08 4-5
160—8 37 55 2-5 250—14 06 42 4-5 340—19 36 00 3-5 412—23 53 52 4-5
170—9 14 21 4-5 260—14 41 39 2-5 350—20 18 07 1-5 413—23 57
180—9 45 12 3-5 270—15 16 31 2-5 360—20 53 42 3-5

GREATEST DISTANCES RIDDEN EACH HOUR.

HRS. M. YDS.

1—23 1,520, R. L. Ede, May 24, '92
2—44 450, " July 14, '91
3—63 49, " "
4—80 310, J. H. Adams, Aug. 13, '92
5—98 1,250, " "

*F. W. Shorland, 6 to 24 hours, July 23, 1892.

6—114 100
7—131 250
8—149 40
9—166 170
10—184 1,440
11—202 1,240
12—220 140
13—232 170
14—248 160
15—265 535
16—280 1,715
17—296 1,360
18—313 700
19—330 320
20—346 250
21—361 1,650
22—379 1,300
23—395 740
24—413 1,215

FRENCH RECORDS.

MILES.

1—2 15, Henry Fournier, Paris, Sept. 18, 1892
2—4 42, Louis Cottereau, " Sept. 29, 1892
3—7 07, " " "

Henry Fournier, 4 to 25 miles, Paris, Aug. 13, 1892.

4— 9 31
5—12 55
6—14 19
7—16 48
8—19 14
9—21 46
10—24 16
11—26 50
12—29 19
13—31 49
14—34 20
15—36 48
16—39 18
17—41 24
18—44 04
19—46 28
20—49 01
21—51 29
22— 53 58
23— 56 26
24— 58 57
25—1 02 21

50— 2 11 10, Jules Dubois, Paris, Sept. 17, 1892
100— 5 02 47⅖, " " July 26, 1892
200—10 28 38⅕, " " "
300—16 34 02, " " "
400—22 46 27, Stephane, Paris, Sept. 13, 1892

CYCLIST vs. TROTTER.

DISTANCE.	CYCLIST.	TROTTER.	DISTANCE.	CYCLIST.	TROTTER.
¼ mile	—0 26 1-5		4 miles	—0 09 26 3-5	0 10 34
½ "	—0 55 1-2		5 "	—0 11 41	0 13 00
¾ "	—1 28 1-2		10 "	—0 24 50 1-5	0 27 23 1-4
1 "	—1 56 3-5	0 2 05 1-4	20 "	—0 50 13 3-5	0 58 25
2 "	—4 28 3-5	0 4 43	50 "	—2 17 01 4-5	3 52 00
3 "	—7 04 3-5	0 7 21 1-4	100 "	—5 27 38	8 55 53

"REFEREE" MISCELLANEOUS INFORMATION.

The world's records for safety bicycles, from one hour to twenty-four hours, are held by French professionals as follows:—

1 hour—24 miles 1,426 yds., J. Dubois, Sept. 23, 1892.
25 miles—1 h. 1 min. 21 secs., M. Fournier, Aug. 13, 1892.
50 " —2 h. 11 min. 10 secs., J. Dubois, Sept. 17, 1892.
100 " —5 h. 2 min. 17 2-5 secs., " July 26, 1892.
12 hours—230 miles, 586 yds., " July 26-27, 1892.
24 " —418 miles 1,320 yds., Stephane, Sept., 13-14, 1892. ‡

These performances were accomplished on the Vélodrome Buffalo, Paris, which has a cement surface.

The record for 100 miles on the road is 5 h. 27 m. 38 s., by T. A. Edge.

F. W. Shorland has ridden on the road 194½ miles in 12 hours, and 366½ miles in 24 hours.

The record from Land's End to John O'Groat's, the extreme points of England and Scotland is 3 days 23 hours 55 min., made by Lawrence Fletcher, Aug. 15-18, 1892.

At Minneapolis, Dec. 20, 1886, W. J. Morgan, rode 234 miles, without a dismount, on a solid-tired ordinary.

In a race of six days, eighteen hours per day duration, in London, Sept. 1-6, 1879, Geo. Waller rode 1,404 miles 1,645 yards.

G. P. Mills, in a ride from Land's End to John O'Groat's, Oct. 4-8, 1891, rode 867 miles without sleep.

At Minneapolis, May 10-15, 1886, John S. Prince rode 1,042½ miles in 72 hours, 12 hours daily for six days.

Jules Terront is reported to have ridden from Paris to Brest and back, 750 miles in 48 h. 23 m. 35 s., Sept., 27-30, 1891.

H. R. Goodwin, June 1-19, 1885, rode from Land's End to John O'Groat's and back and to London, 2,054 miles in 19 days.

T. A. Edge, rode from Land's End to John O'Groat's, 874 miles in 96 h. 40 m., and completed 1,000 miles in 131 h. 38 m.

In 18 years the mile record has been reduced 1 m. 10 3-5 s.; in ten years 35 4-5 s.; in five years 26 4-5 s., and in one year 9 3-5 s.

W. Martin, in a six day race at New York, rode 1,466 miles 700 yards.

The world's ordinary record is 2 m. 25 3-5 s., and stands to the credit of W. W. Windle. F. J. Osmond holds the English record, 2 m. 28 4-5 s.

* Made on geared front driver, or geared ordinary.

‡ The English claim that this race was not properly measured, and therefore that the distance ridden by Shorland 413 miles 1,615 yds., was the greater.

TRAINING.

What is Training?

Training, as applied to athletics, may be defined as the preparation of the body for new and unaccustomed strains, and the gradual fitting of the human frame to undergo the severest physical exertion.

Until an athlete be trained he should abstain from physical competitions, because to take part in any such contests when out of condition is a serious matter, and a man may easily strain himself before he has undergone adequate preparation. For example, a cyclist riding in a race when untrained, may have determined to give up the moment he feels he has had enough. Towards the finish of the race he is conscious of being distressed, but the familiar shouts of the spectators and the encouraging cries of his friends make him forget his determination, so he sets his teeth and prepares himself for a final grand effort. His muscles and lungs are not fit to stand the strain, sickness overcomes him, and the result may possibly be an injury for life.

It is advisable before commencing to train to consult a physician, and be carefully examined to see that you are thoroughly sound, because if you are not, it would be folly for you to begin.

Be careful as to diet, retire early, and abstain from smoking and alcoholic drinks. Smoking depresses the heart and shortens the wind, whilst drinking strains the blood. I have beaten many a man who would have had a far better chance, and perhaps beaten me, if he could have let liquor alone. I do not train or ride during the winter, but take a complete rest. Last winter I mounted a wheel only once between October 16th and the middle of March. In my opinion this is a better course for the American rider to pursue than to attempt to keep in condition all the winter. I have noticed that the men who train even a little all the winter generally go stale before the fall meets are over.

I noticed while in England that a great many of their path racing men did considerable riding during the winter months. I do not believe in this, and think that many of them would shew to better advantage and stand more hard racing if they were to ride only during the season. My body seems to require plenty of repose, and I do not think I am very different from the rest of mankind, but perhaps I can stand a little more than my share of rest. To this long abstention from riding and any kind of severe exercise during the winter, I attribute the fact that I have been able to go successfully through longer and more trying racing seasons than anyone else. In the early spring I begin to ride on the road with a road wheel, doing from 10 to 30 miles a day. I take it easy, and do not attempt any fast work, and whenever any scorchers catch me and want to 'take me on,' they have to do all the taking themselves, and I view their disappearing back wheels with the greatest complacency. I think it must have been some of these gentlemen who, after viewing with disdain my feeble efforts on the Ripley Road in England last spring, announced in the papers that I was a failure, and could not ride for nuts. I do not think I ever met any of them upon the path, but if I did I am quite sure they were not before me at the winning post.

I continue road work for about three weeks until I find that my muscles are working all right and the feeling of stiffness which always comes to me when I first begin riding has entirely gone.

I have not been impressed with the good effects of walking or running while training for bicycle races; I have tried both, and now advise against them. In walking and running, different muscles are used to those required in cycling. The danger from stiffness after walking is considerable, and blistered feet are a very frequent occurrence; a moderate walk will do no harm of course, neither will it help your cycle training. Running will improve the lungs, but not the muscles you need in riding. The best exercise for training for cycle racing is riding a bicycle, and if this is done regularly no other form of exercise will be found necessary.

Most men should commence training on the road at least a month before their first race, but I take a much longer time to get fit. My only consolation is that I keep in form longer than usual, generally right through the season, except when, as last year, I rode for and won the 50 Miles English Championship, without any preparation for such a long distance, and in consequence went stale.

This preliminary road riding, like everything connected with training, must be done in a regular and systematic manner. Regularity in work is a most important element of successful training. The morning exercise should be taken from one-and-a-half to two hours after breakfast.

I do not believe in taking any exercise before breakfast as some well intentioned writers on the subject advise. I have tried it but it was not a success. It seemed to me like trying to run an engine without fuel. There was no question in my own case but that half an hour's work before breakfast took more out of me than an hour's work after a good meal had had time to digest. I found it did not agree with me, and therefore discontinued it.

Well then one-and-a-half or two hours after breakfast, ride from eight to ten miles on the road. I advise wearing a sweater to work off the adipose tissue. The last three or four miles should be ridden at a smart pace, but refrain from spurting. Go straight, without loitering about, to your dressing room which should be warm. Here the perspiration will increase. You should immediately be rubbed with soft

towels until thoroughly dry, when a further rubbing with some alcoholic preparation will prevent your becoming stiff. I would advise lots of hand rubbing. This is an important thing, as it benefits the muscles and works off flesh. After each ride I am rubbed thoroughly dry with towels, then my whole body undergoes a sort of massage treatment from the bare hands of an attendant, and then a liniment is plentifully applied and rubbed in. I consider rubbing with the bare hands by a strong healthy person one of the most valuable adjuncts to good training. By it the muscles are made free and pliable, and the skin is kept in a smooth, healthy condition. Also after a hard race there is nothing so refreshing as to be worked with the bare hands. No amount of rubbing with any kind of towels seems to have the same effect. It revives one more than anything I have ever seen tried. The effect is felt at once, and there is no re-action as is the case with stimulants.

A man in training should never be overheated unless he is prepared to be properly rubbed down. This point is most important, as a cold is easily contracted.

It is an immense advantage to a racing man when he starts training if he can obtain the assistance of a modern adviser, preferably, one who is himself a cyclist, who works upon reasonable and rational lines, and who will rub him thoroughly as above described.

It is undoubtedly a fact that where feelings of friendship or affection exist between the two men, the beneficial effect upon the rider is greater.

The trainer should study your peculiarities and point out your errors. On the other hand, nothing could be worse than being under the guidance of a bad trainer, or one with an imperfect knowledge of the requirements of cycle training, and faddist ideas of his own.

To ride immediately or soon after a hearty meal, whether it be breakfast, dinner, or supper, is worse than useless when training. A feeling of dullness is sure to come over one, and the best efforts cannot be put forth under such conditions. If exercise can be taken in the afternoon, it should be about two hours after the mid-day meal and a

good rest. Then do the same amount of work as in the morning, on your return being properly rubbed as before. By this preparatory work you will fit yourself to undergo the fast work and hard spurting which will have to be acquired on the track.

Men who are obliged to attend to business all day, and every day, cannot of course follow the above directions, but some might get away an hour before dinner and take half an hour's ride, so arranging that they may return without feeling tired, and have at least ten minutes after being rubbed down before eating. Do also eight or ten miles every evening on the same lines as those I follow.

Having gone through two or three weeks' hard road work, you will have worked off a good portion of superfluous matter, and improved your limbs and wind. With these results it is advisable to drop all road riding, because it will have a decidedly slowing effect upon a path man who wants to be in the first flight, and above all to be a fast finisher. So put by, or sell your road machine, take your path racer and go on the track, your first aim being to get what is called staying power.

In the morning I would advise from six to eight miles riding around at a good rattling pace, gradually increasing your speed as you near the end of your last mile. In the afternoon ride from five to eight miles, putting in at intervals a fast quarter.

Each time you begin practising on the track, ride a slow lap or two to get your joints into working order, "limbered up" as we say. After a week's afternoon riding do the same sort of work in the morning, also increasing your speed as you improve in condition. I work at about a three minute gait for several days after taking up track work. When I find I am going all right, I try to sprint 100 yards or so, and keep increasing the distance each day until I do a quarter of a mile.

During my stay in England, I trained on the Herne Hill Track, and usually did about ten miles in the forenoon and a similar distance in the afternoon. Sometimes I rode

five miles after my six o'clock supper, but that was exceptional.

As you get good staying power, you should give your afternoon's work to sprinting. After riding around the track once or twice at a slow pace, ride a mile and sprint the last 300 yards. Do this half-a-dozen times during your work, and increase your sprint until you are able to go the whole of the last half mile. One important thing is this, if you start to sprint go right through to the end, don't stop half way.

A good thing is to have your trainer time you in your afternoon's work. He can hold the watch on you for quarter, half, and one mile trials, and this will give you an idea how you are riding. It will help you to refer to the cycle papers, and note the times made at the different meetings, allowing for conditions of track, etc. By this you can judge how your competitors are riding and compare their times with your own. But you must not forget that it is much easier to make fast time in a race when you are full of excitement than during the dull monotony of riding alone.

I am aware that my mode of training, as above described, is different to the advice often given, but I say that mine has proved the greatest success in my own and other cases. Nearly all the men of the past trained for short sprints only, and when it came to a long hard race they were not in a condition to stand the pace, and could enter but one or two races in a day. Consequently, a man who in training does long heavy work in the morning, and quick work in the afternoon, has an advantage, and can repeat race after race.

Train for the distance, which, after experience, you find best adapted to your capabilities. Some men have the power to stay long distances at a moderate pace but cannot sprint at all, while others can do just the opposite. A very few can do both. Frank Shorland is a wonderful example of a man who can both stay and sprint. His ride of 413 miles in 24 hours places him at the head of riders as a stayer, and his ability to do the last mile of that distance in 2-42 shows that he should not be overlooked

when it comes to a driving finish. I have not met another man in whom both these qualities were so well developed.

When you have found out the distance which suits you best, try it about once a week. Let someone hold a watch on you, and clock each quarter of a mile. At each succeeding attempt try and improve the previous quarter a little, but hold enough power in reserve to ride the last quarter the fastest. Practice with the thought in your mind that the race is always won in the *last* quarter, and not in the others. If one has trained for short distances, say five miles and under, it is certainly very hurtful to race very much longer distances.

In England I had trained for the short distances, and without any proper preparatory work entered and rode in the 50 miles Championship. I had already won the one and five miles, and wanted the 50 also. The lesson that I learned was a costly one. During the latter part of the race my legs began to feel numb, and while they kept at work yet the life seemed all gone out of them, and for several miles before the end of the race I thought they would not last till the finish. They did not reach a normal condition for about three weeks after this effort. From Medical examinations made since then, I learn that the cause of this was that my heart had failed to properly do its work owing to the excessive strain upon it for so long a time. In other words my heart had not been properly trained for long distance racing.

Courage, both moral and physical, is one of the finest attributes of character, and both can be gained and cultivated if diligently pursued. Courage is needed not only in racing, but in deciding when not to race. If, for instance, a rider is taking part in a two mile race, and at half-a-mile from the finish the men begin to sprint, and he finds his physical powers are not strong enough to stand the strain, he should stop, but if for lack of moral courage he allows his mental powers to urge him on in his endeavours to come in a winner, he may do himself great harm, and instead of carrying off the next race be prevented from riding with success for a long time.

I cannot advise anyone to train for pleasure. Taking a little exercise to keep from getting entirely out of condition is very often called training. That is not my experience however

I am often asked if I had a pleasant time during my English trip. I always answer 'yes,' because there were a great many pleasant things connected with it, and I met a number of people who tried to assist me in every way. I have met nearly all the prominent racing men in Germany, England, Ireland, and Wales, besides those of America, and I am sure there is no branch of sport containing more men with good education, with brains, and more thorough gentlemen than cycling; but I do not think most people would have called it a pleasure excursion to be obliged for five months to follow a strict routine, each day exactly like the other. It got to be very monotonous, and at times I felt like quitting. I kept a record of the miles I rode while in training, and find that I rode over 1,200 miles last year before I was able to win a race. I know that I am one of the hardest men to get 'fit,' but I have very little trouble after I once reach perfect condition. In getting fit for a race I am compelled to train much longer and do more hard work than most racing men.

If I stop my work for a few days and then race I find that my lungs are the first to give notice that I have neglected my practice, and if the distance is considerable, or the pace fast, I feel quite exhausted at the end. I generally recover very quickly though, and it is rarely more than 10 or 15 minutes before I feel strong enough to start again should it be necessary.

The following points may be studied if a rider desires to cultivate a good style in racing. Take great care to pedal evenly. Don't favour one leg more than the other. Pedal straight. Don't throw your knees out, but keep them straight. Ankle motion; this should be carefully watched, as there is a great amount of speed to be derived from it.

Blocks are so much used that it may be presumptuous on my part to say that I never found them necessary, having always worn a shoe with a plain leather sole, in which the

pedals soon make indentations sufficient to make my feet keep their position. I always use long toe clips, extending about 4-in. over the top of my feet; many riders now use blocks and toe-clips. My objection to blocks is that there is no chance whatever to change the position of the foot, while the plan I have followed does allow of a slight change. A very slight change of position in a long race seems to rest the rider very much. The position of the blocks, if they are used, should be determined by first riding with the shoes without the blocks. Notice the position of the foot on the pedal which is easiest for fast work, and then have someone mark with a pencil the lines of the pedals on the soles of the shoe; the blocks should fit the pedals snugly, but not tightly; and care should be taken to get them on straight, or crooked pedalling will be the result. A tight block would greatly add to the danger in case of an accident, because the rider would probably be unable to get his feet off the pedals quick enough to help himself. Don't let the shoulders wabble, for if they do the tendency is to make the running of the machine unsteady, and steadiness and rigidity are of the utmost importance. Don't raise yourself from the saddle when sprinting. Don't shake the head. It should be bent slightly forward, with the eyes looking straight ahead. Hold the handle-bar naturally. Handle-bars should be dropped low.

Be careful not to get the saddle too high, or you will lose power. If it be too low you will find that your legs become cramped. The position of the saddle can only be determined by experience; the rear part of my own saddle is about 1¼-in. forward of the centre of the rear wheel; I use an 11-in. saddle. My leg is 36-in. long on the inside; a man with a longer leg might place the saddle further back, while a shorter man should place it more forward.

I noticed on my arrival in England that the position of the English riders was further back than that of the American riders. I experimented a long time to ascertain in which position I should put the saddle to obtain the best results, and found that by riding with it much more forward than the English riders I was able to get the most speed.

When I had my saddle fixed in the English style, well back, every time I sprinted I found myself pulled forward, and the harder I sprinted the further forward I would go, and when I got to top speed I was sitting away up on the peak of my saddle.

The stooping position of the body cannot well be avoided in racing, and has to be practised in training, and that is why it is necessary to have the handles very low on a racing machine. One reason for the stoop is that the weight of the body can better be thrown on the pedals. Another and most important reason for bending forward is to avoid the pressure of the air against the body, or in other words, decrease what yachtsmen call the 'sail area.'

To a person who has not raced it seems ridiculous to say that a stooping or upright position of the body makes considerable difference in the pace, but racing men will agree with me that the wind is a very important element in all speed contests. I do not think that this position causes round shoulders. I am unable to call to mind more than one or two round shouldered riders, and I think they were so formed. For my own part, I am noticeably straighter than when I began riding, but I admit the tendency is to acquire a habit of stooping. To avoid this keep your chin up and well away from the body, this throws the head upward and backward, and makes the shoulders follow, and so keep their proper position.

The question of machines is one of individual preference. The safety that I have ridden with the best results has a base of 42½-in., with equal 28-in. wheels.

There are so many high grade machines that a serious mistake cannot be made in buying one, and, of course, we all have our preferences, but the man who buys a racing wheel which has no reputation, or one by a maker of low grade roadsters, is, to put it plainly, a fool, for in nothing does a man prove himself to be what the English call 'penny wise and pound foolish,' more than when he buys a 'cheap' racing wheel. The best, and nothing but the best, that hands can make and money can buy should be good enough for you.

I have in my mind's eye a race I watched last year in Canada. About 20 started, most of them on wheels I had never heard of, and was astonished to see in the hands of racing men. The track was somewhat crowded, but all started very slowly. After going 20 yards they bunched, and as a dozen gently tipped over the men got off or fell off. About six machines were brought back perfect wrecks, having literally gone to pieces. Men stand no chance of winning on such 'rotters,' for if the frames and wheels would not stand a gentle mix up, what must the bearings have been! Those riding such machines stand no chance of success against good ones, and should, before going on the track, insure themselves heavily and bid their friends good-bye.

Good racing wheels are now made as light as 20-lbs., and as high as 28-lbs. The lighter weight wheels, when made by firms of great experience in the building of first class cycles, are all right for riders weighing 125-lbs. and under, but for those weighing more than that I think a heavier wheel is preferable.

Whenever the absolute rigidity of a machine is sacrificed in order to save a little weight, a good wheel is spoilt. Nothing is more aggravating than to find a wheel spring under you at each push on the pedal near the finish of a race, because at that time one generally needs every advantage possible, and every time the wheel springs a great deal of speed is lost. Since I began riding a racing safety two seasons ago I have used but one make, and with the exception of, I think, three races and my road and some path work, I have done the whole of my training and racing upon two machines, that is one per season; the first was an ordinary stock pattern, and was not built for me, the second was built for me, but differs little from a stock pattern. Both machines weighed between 26 and 27-lbs.

The question of food in training is a most important one, a great point being moderation, and the avoidance of an indigestible diet. Personally I have followed no special line of diet. I don't eat potatoes except now and then in very limited quantities, and I believe to avoid them altogether is the best plan; neither do I drink coffee, simply because I have no liking

for it, but nearly all other table luxuries I indulge in and enjoy. I drink tea in preference to all other beverages.

I have found nothing more refreshing in the dressing room after a hard race than some nice cool tea, with lemon juice added, and sweetened a little. It is much safer than water, and certainly free from all germs of disease. I know of nothing better.

In training for cycle riding the same general rules should be followed as in foot racing, although they need not be so closely adhered to. Eat in moderation, and take time over your meals. If not hungry, eat little; do not force nature. Your food should be plain, and well cooked. A racing man needs to train his stomach as well as his muscles. Masticate your food well, and finish your meal at the very least one hour before racing.

A rider going to a strange place to race should not drink any cold water, as the result may be serious. Water which is run through pipes in cities and towns frequently affects the bowels unpleasantly. Soda Water and Apollinaris or other good mineral waters are the safest. The less one drinks the better.

Eat moderately and regularly, not between meals nor just before going to bed. Some good and wholesome things are beef, broiled or roasted, mutton, fowl, eggs, bread, rice, tapioca, oatmeal, corn starch, sago, and cracked wheat. In fact almost all kinds of food may be eaten in moderation though such articles as hot bread, pies, dumplings, nuts, pancakes, veal, pork, lamb, and greasy food generally should be avoided as being hard to digest. Ripe fruit in season is good, but I think potatoes are not. I eat three meals a day only, and prefer a moderate amount of meat every time.

The meats that I have named as proper articles of diet give strength to stomach and body, and do not make one fat. The American Indians are the nearest approach to a race of natural athletes that have come under my observation; they will eat nothing but meat, so long as there is a dog in the neighbourhood. I have never seen nor heard of a fat Indian, although I am well acquainted with them.

Leanness is generally caused by lack of power in the digestive organs to assimilate the fat producing elements of food. First restore digestion, take plenty of exercise, open air, eat oatmeal, cracked wheat, graham mush, baked sweet apples, roast and broiled beef, and in the morning sponge all over with salt water, followed by a thorough good rubbing.

When cramp occurs in the stomach a small glass of good brandy should be swallowed immediately. The usual cause of this is indigestion. Warm water as a drink is preferable to cold at other than meal times, particularly when you are heated, and is especially beneficial to those subject to indigestion or biliousness. For the latter a glass as hot as can be drunk the first thing on rising in the morning.

Plenty of sleep is necessary to good health and strength. Most men in training should get at least eight hours solid, more won't hurt. Lie on the right side, giving the heart free action. Sleep with the limbs straight out, do not draw them up.

I do not advise a cold bath, but a salt water sponge bath in the morning is an excellent thing. Before retiring drop a handful of salt into a pitcher of water, and when you rise sponge the body all over, and rub yourself quite dry with a soft absorbent towel. You will find this will give you a pleasant sensation of warmth and a general elevation of spirits, thus proving it to be a natural tonic or stimulant.

Turkish baths may have a good effect on fleshy persons while training, but I advise against them within a week of a race. The baths should be used with moderation; a warm bath weakens the body at any time, and the only good that can be effected by it is the reduction of flesh. This can be better accomplished by plenty of hard work, and the strength reserved at the same time. A man in training, if he is properly rubbed, does not stand in need of a bath from a sanitary point of view; he cannot avoid being absolutely clean. I have tried cold baths in hot weather immediately after coming in from hard work while I was in a perspiration, but found that the bath gave me

a shock that was not compensated for by the feeling of coolness that I afterwards experienced.

I do not think that the rapid cooling of the body in such a way can accomplish any good; a horseman would not think of giving a first-class animal a cold bath immediately after a hard race, and a man should not be used worse than an animal if the best results are desired. The only bath I think advisable when training or racing is the sponge with salt water in the morning on rising from bed.

In riding do not wear tight belts or shoes. The muscles of the legs and feet are the most commonly affected with cramp, especially after great exertion. The best treatment is to immediately stand, and rub the part well with the hand.

You may find at times when you are getting into form that boils will appear on the neck. A poultice of ginger and flour applied to the boil will soon bring it to a head, and cause its disappearance.

For cold in the chest dip a flannel in boiling water and sprinkle with turpentine. This will relieve the most severe cold or hoarseness if worn over the chest.

A good remedy for a cold is three cents worth of liquorice, three cents worth of rock candy, three cents worth of gum-arabic, put into a quart of water and simmer until thoroughly dissolved, then add three cents worth of paregoric, and a like quantity of antimonial wine.

To cure hoarseness make a strong tea of horse-radish and yellow dock root, sweeten with honey and drink freely.

Cuts caused by falling from your machine, should be well washed until all the dirt and grit are out or they will fester. Then anoint well with zinc ointment, and bind up with cotton wool.

For a slight cut bind around it a piece of common unglazed brown wrapping paper, such as is used by grocers.

A sprained ankle should be washed frequently with cold salt water. Keep the foot elevated on a cushion. Take every day some cooling medicine, and in a few days the ankle will be well.

To stop bleeding, a handful of flour should be bound over the cut.

A sun bath is of more benefit than warming by the fire.

Business worries and training go badly together. One or the other will suffer.

The cares of business have a depressing effect, and to train to the very highest point a man must be free from all worry. Late hours cannot be indulged in either. A regular hour for retiring must be rigidly followed, or the best results will not be obtained, no matter how carefully and well all the rest of one's work may be done.

There is no question of the good to be had from regular gymnasium training. If we live in the city and have the means we can get it, otherwise the ways are still open, in a large degree, to those who will make the most of their surroundings.

The most intelligent men in our colleges to-day are those who figure the most prominently in athletics. The man with dyspeptic tendencies who expects to capture the first University prize will get sadly "left," but the man with plenty of brawn and bone, who keeps his physical strength in good condition, is the one who is going to win his way to the front. There is hardly anyone, no matter how perfectly developed, who has not some weak spot, therefore be careful to take light exercise at first. If dumb-bells are used they should not weigh over 2-lbs.; by exercising with them for ten minutes in the morning upon rising, and the same at night before retiring, you will derive much benefit. A pulley weight in the house is very beneficial, and will strengthen the arms and expand the chest.

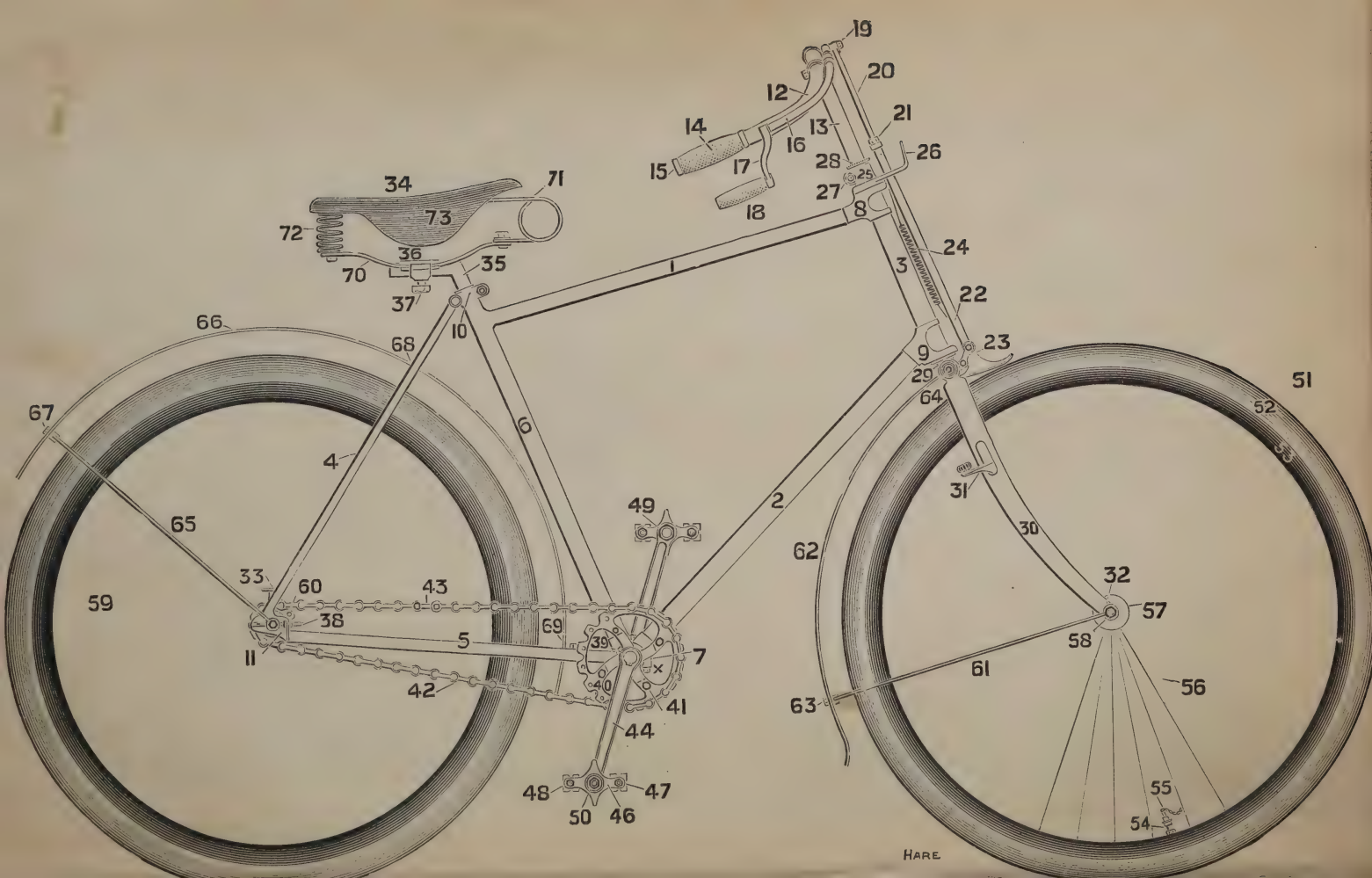
One of the simplest and best exercises in the way of athletic training is to devote a few minutes each morning to chest and abdominal breathing; I would advise the open air for this, as there is more oxygen to draw from. A simple and occasional caution to walk and sit erect, and with the shoulders drawn well upwards, is easy to give. Once this habit is adhered to a wonderful stride has been taken in physical culture. I might add that the foundation of strength is laid by simple, healthful living; beauty is nothing more than health and form combined, and this can only be acquired by plenty of physical exercise.

Training for a race and riding a race are entirely different things, but the successful racer must be able to do both. It is almost useless to advise how to ride a race; the whole matter must be solved by the man after the race is started. Everybody in the race must be kept under his eye, and every advantageous point watched. Experience is the best teacher in cycle racing as in other things. If you are well acquainted with the men with whom you are racing you can very easily decide upon a position, otherwise I advise you to be well towards the front. One thing the Novice must bear well in mind, viz., that the race is won at the end and not at the start. I have seen men ride the first quarter of a mile race as fast as if it were the finish, and thus pump themselves all out before half the distance was travelled, and throw away all chance of winning. Generally one man is not so much better than the rest of the world of cycle riders that he is able to run away from his competitors and then stay away. Nearly always the man who 'runs' away in the first part of a race 'comes back' to the 'crowd' long before the finish, and then has no strength with which to make a final sprint at the end. The hardest races that I have ridden were for a quarter of a mile. In such short races it is always a struggle from start to finish, and I have found myself more exhausted after one for that distance than after a mile or two mile race. In the longer distances the spurt is begun by a gradual increase of speed, and not by a sudden rush.

I think it would be a good idea if the N.C.U. were to abandon the 25 and 50 Miles Championships of England, because the distances are too long to interest the majority of spectators, and by running shorter championships not only would the interest of spectators be sustained, but such races would prove just as well one man's superiority over another. On my arrival in England I noticed that the English riders used higher gears than the American riders. I am quite positive that the best results can be obtained from 64, 66, or 68-in. sprocket wheels, except on poor grass or other very rough tracks, where sometimes even a lower gear might be used more effectively. I have frequently noticed that when a man with a 72-in. or higher gear comes to the last quarter

he is unable to hold the sprint which is obtained upon a lower gear. My gear, while riding in England, was 64-in., with 6¼-in. cranks; on my return to America I changed it to 67½-in. gear, on the same machine. My reason for using a little higher gear in this country was on account of the larger tracks. Most of our tracks here have a 'straightaway' last quarter, while the tracks in England are much smaller, and my idea is that the difference in the two gears could be used to advantage corresponding with the tracks.

A. A. Zimmerman, N. Y. A. C.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HARE

The following are the names by which the different parts of a Safety, as illustrated on the above page, are generally known in England.

The Frame is called "straight tube diamond frame."

1. Upper main tube.
2. Lower main tube.
3. Front frame tube.
4. Back stays.
5. Back forks.
6. Centre stay.
7. Crank bracket (containing discs or cones at outer ends, crank axle with balls and adjustment clip bolt; lubricator on outside.
8. Upper ball head race, or cup.
9. Lower do. do.
10. Saddle pillar adjustment clip, with bolt and lock nut.
11. Back fork end.
12. Handle-bar.
13. Handle-bar stem, or stalk.
14. Handle (made of cork, rubber or horn)
15. Ferrule or nickel tip of cork handle.
16. Brake Lever.
17. do. do. crank.
18. do. do. handle.
19. do. plunger connecting bolt or pin.
20. Brake plunger.
21. Brake plunger adjustment nut.
22. do. spoon and tube.
23. do. shackles, bolts and nuts.
24. do. spring.
25. Handle-bar clip and ball head cone combined.
26. Lamp bracket.
27. Bolt or lock nut for handle-bar-clip.
28. Ball head adjusting nut.
29. Front fork crown with brake lug in front, and mud-guard lug behind, when steel mud-guard is used.
30. Front fork blades or sides, right and left.
31. Footrests, generally detachable.
32. Front fork ends.
33. Step, on other side of machine.
34. Combination spring saddle.
35. Saddle pillar, seat pillar, or ⅂ pin.
36. Saddle clip.
37. Set screw or bolt.
38. Chain adjustment bolt.
39. Crank axle.
40. Detachable gear, or sprocket wheel, attached to arms by
41. Four chain wheel bolts.
42. Driving chain.
43. Detachable link in chain.
44. Crank (right). Left hand crank on other side of machine
45. Cotter pin, nut and washer for detachable crank on other side of machine.
46. End plates, carrying ball races which are fixed on the central tube and united at the ends by the rat-trap side plates (in rat-trap pedals) or by the
47. Bolts and nuts carrying the
48. Rubbers as shown in sketch (in rubber pedals.) Pedal pin on which the pedal revolves, attached to crank by
49. Nut and washer, and carrying on outside end of pin the adjusting ball race cone, which is held in position by the
50. D washer and lock nut.
51. Front or steering wheel.
52. Front wheel tire.
53. Front wheel rim.
54. Air valve.
55. Dust cap.
56. Spokes.
57. Front hub, which comprises outside shell with bushes, axle or spindle, carrying fast ball race cone and loose adjusting ditto, with nuts.
58. Washers for fixing to forks.
59. Back wheel or driving wheel, with parts as front wheel.
60. Driving wheel hub.
61. Front mud-guard stays.
62. Front mud-guard.
63. Front mud-guard screws.
64. do. do. do.
65. Back mud-guard stays.
66. Back mud-guard.
67. Back mud-guard fixing screws
68. Do. do. do. do.
69. Do. do. do. do.
70. Saddle frame.
71. Front saddle spring.
72. Back do.
73. Leather top, with tension adjustment screw in front, underneath.

POINTS FOR CYCLISTS.

INTRODUCTORY.—The tools or instruments required for most games in all parts of the world, change but little from year to year, but in cycling every season brings many new and important alterations, so that cycles and tires of two years ago, when my last book on the subject was published, are quite antiquated. 20,000 copies of that edition were sold in thirteen months, and as orders for them are still coming in from all parts of the world, I need not offer an apology for an 1893 edition up-to-date, with which I have great pleasure in presenting my friend MR. ZIMMERMAN, for his work on training.

When writing the first edition of 'Points,' in December, 1889, I feared that some of the advice would appear trivial and unnecessary, but since then facts have again and again come under my observation, which prove that no point in connection with cycling is too small to be unworthy the notice of, or useless to some of its votaries. The following paragraph from *Bicycling News* is apropos.

'A *B.N.* man was in a cycle shop last week, when a safety was brought in by carrier. It had come ten miles to have its saddle lowered, the owner not knowing how to turn the bolt ! ! !'

WHEN I LEARN that a chain, so slack that the lower half almost forms the eighth part of a circle, has been running for four months without any kind of lubricant, and then, apparently in disgust at its own treatment, mounted the cogs, I marvel at the owner, who admitted the facts, blaming the maker instead of his own lack of common-sense ; and when

a man tells me that his socket steerer is no good because it is stiff, I am not surprised to learn that since he bought his machine five months ago, although he has carefully and requently oiled the bearings of wheels, crank axle, and pedals, and the chain, it never occurred to him that the socket also required oiling just as often. Therefore, reader, while perusing this, remember that what may be useless to you may be a point for someone else, or serve as a reminder respecting some part of a cycle hitherto forgotten or unnoticed.

LEARNING TO RIDE a safety will be much easier if you have the assistance of a friend, who must hold you lightly by the arm, near the shoulder, and pull you towards him or push you from him as required by the erratic movements of your first attempt. For this choose a quiet road with a very slight incline on which your machine requires no propelling. Place the saddle well back and low, so that you may gain confidence by having no fear of a fall, the pedals being at such a distance that you can easily place either foot under them when at the lowest, and the handles fairly high. Sit erect with the ball of each foot on the pedals, and the toe quite straight or slightly turned in, not out, or you will knock your shins against the cranks. The toes of your shoes, (which are much better for cycling than boots), should project about 1½-inches beyond the pedals. By following these simple directions you will avoid acquiring bad habits, afterwards difficult to break. Now mounted, you start with a determination not to take your feet off the pedals every time you feel that you are going over, but to keep them on and trust to your friend to prevent you from tumbling, while you attend to the steering, the turning of the front wheel to the left or right being all that is required to adjust your balance. As in learning to swim, confidence is the greatest aid. Directly you have a tendency to fall towards the left, steer to the left, not the opposite way as most beginners do, which would deposit you like a lump of lead in your friend's arms, presuming him to be on your left side. Keep erect, watching the road in front, not the machine, and steering whichever way you are inclined to

fall. So soon as you *feel* exactly how much steering is required to keep your balance, you will have overcome the first and most difficult task in learning to ride. A lesson for half-an-hour at a time is enough.

'If at first you don't succeed, try, try, try again,
Time will bring you your reward, try, try, try again.'

Do not be discouraged if you cannot keep your balance after two or three lessons. Some have said, 'Oh! I can never learn,' and a few moments afterwards have found they could ride alone. The power of balancing on a safety comes suddenly.

Then you must learn to mount alone. Standing behind your safety, (at the top of a slight incline is best,) place the left foot on the step and giving the machine a push off with the right,—either at once, or after two or three hops,—spring up and balance yourself on the step, steering to right or left as required to keep yourself from falling. When you can do this easily, glide into the saddle as the right pedal nears the top of the stroke, so that your right foot may just be in time to reach it as it goes over, and your left quite naturally catches the other pedal as it rises. When proficient you should be able to get into the saddle simply with the push-off, or one hop at most, by timing the rising of the right pedal in order to catch it at the exact moment. It is not a pretty sight to see a man hopping for half a dozen yards along the street before leaping into his saddle.

Turning is simply a matter of a very little practice after you can ride straight. Begin in a square or wide road by describing large circles and gradually reduce their size.

The most graceful and I think the easiest way to dismount, is, when the left pedal at its lowest is just about to rise, to lean forward a little, with a portion of your weight on the handles, and swing the right leg back over the driving wheel to the ground close to the left pedal, at the same time, if necessary, applying the brake. After learning to do this neatly, practise dismounting by the right pedal, which may be useful in a tight place, though at first awkward.

Learning to ride a tricycle is a much more simple matter. Stand behind the machine, grasp the handles, including the brake also, if on an incline, place one foot, generally the left, on the axle bridge, and so step into the saddle. Long legged men, after grasping the handles can put one foot over the axle on the pedal almost at its lowest, and thus stepping into the saddle start the machine.

To dismount place one foot back on the axle bridge as the other pedal is rising. Never step off if on an incline, until you have slowed down the machine by back pedalling or application of brake, otherwise the consequences may be disastrous.

In turning corners, or riding rapidly around curves, lean well over in the direction you are turning to avoid a capsize, which is more frequent with tricycles than with safeties, because the rider of the latter, having learnt to balance without thinking that he has to do so, leans over instinctively, while the inexperienced tricycle rider must *remember*, and sometimes memory acts just as he is 'coming a cropper'—a trifle too late. It is, therefore, advisable for beginners to slow down when approaching sharp corners, until practice has taught how to negotiate them at speed.

HOW TO RIDE.—The beginner under 'learning to ride' was instructed as briefly as possible, in order to avoid getting him mixed by too many directions, but before he can become an accomplished rider, able to obtain the greatest amount of speed and comfort for the smallest expenditure of muscle, he will have to practice frequently according to rule, until position and mechanical action become second nature, and are performed without thought.

Opinions differ about most things, but the majority of riders agree that the best position for work and comfort is with the centre of a roadster saddle, from 8½ to 12-in. behind the crank centre. Much depends upon the length of the rider's leg. My leg measures 34-in. on the inside. I do not like the *back* of my saddle to be more than 15½-in. behind the centre of crank axle. I ride with rather a short reach, so that I can, when sitting in the saddle, *easily* put my foot well under the pedal at its lowest. I find the short reach far less

tiring than a long one, where you can just manage to put your foot under the pedal. This position will seem strange at first to those accustomed to sit over, or a trifle in front of their work, but two or three rides will generally convince them that it is best. By moving the saddle now and then along the ⅂ pin, the rider will find the position most suitable for himself and the roads of the district in which he cycles.

In a hilly country it will be found advantageous to put the saddle more forward than usual, so that in climbing hills you may be able to put all your weight on the pedals, and pull better at the handles.

Also when the roads are greasy put the saddle forward, for the more evenly balanced is the rider's weight between the wheels of a safety, and the more evenly he pedals, the less the tendency to slip, which depends a great deal, however, on the nature of the tire and the quality of rubber in it. The purer the rubber, the greater the tendency to slip.

The more level a country the further back within the above limits for comfort and speed can you put the saddle, and proportionately lower. The result will be that you can pedal quicker, 'clawing,' or ankle play becomes easier and more effective, but most important of all, you avoid perineal pressure, for your saddle must be a vile one indeed if it affects you in that position. It is a curious thing that the further you sit back, the shorter do you like the 'reach,' that is, the nearer, to avoid fatigue, will you prefer your pedals, which on a long run seem to get farther and farther away. Those who ride just reaching them with their toes, not only lose power, but put an injurious strain upon the tendons of the leg.

Place the handle-bar at such a height that you can comfortably grasp it without stooping, and at the same time adjust the brake so that it acts properly, and is within easy reach of the fingers.

Let your weight rest well against the back of the saddle, and push thence from the hips, not the body, which should remain still and erect in an easy and graceful position, carefully avoiding any movement of the shoulders or wriggling in the seat, which looks horrid, is extremely unfair to

your saddle springs, and is the usual cause of their breaking. The bicycle back is only excusable for a spurt against the wind, or when racing on the path. If you wish to develop your chest and lungs give them full play by riding erect and so improve your wind. Also keep your mouth shut, for cold air rushing in injures the teeth, causing colds, neuralgia, etc., and in summer a thirst which requires too frequent quenching.

Continuous ankle play, the 'clawing' action before referred to, whereby a firm grip is obtained of the pedals, is of great importance, not only in keeping the machine going easily and well, but in preventing the feet from losing the pedals when travelling fast. With the *ball* of one foot resting comfortably on the pedal at the bottom of the stroke, place the other foot in the same manner on the upper pedal, then lower the heel as much as possible and press from the ankle forward and down, followed immediately by a good thrust with the full force of the leg. At the bottom relax, straighten the foot in a line with the leg and draw the pedal backwards, thereby assisting it over the dead point. This is the theory, but a good deal of persevering practice is required to make a rider so proficient as to do it without thought. Even a beginner will at once observe the advantage of ankle play in ascending a hill, and then is the time to assist your legs by pulling the handles. Short hills may be rushed, but it is advisable to take long ones quietly, now and then changing your style of driving. At such times, and when fatigued, it is a relief to ride for a short time with the hollow of the foot on the pedals. When it becomes a struggle between rider and machine, walk. Unless you are strong, walk most hills, the change of exercise and rest out of the saddle is beneficial as well as enjoyable. The man who jams his legs up and down like pistons is the one who quickly falls when he gets on greasy setts, and that is also the way to break the spokes, because of the unequal jerky strain brought to bear on those upon one side of the wheel and then upon the other. In no other way can I account for the fact that good riders have ridden light machines for nine or twelve months without breakage,

but directly they sold their machines to inexperienced riders the spokes began to go.

Assist your machine when going over bad roads. For instance, if it gets into a rut, help the steerer by throwing all your weight on the back wheel and lifting the handles; directly the front wheel is out, lean with all the weight you can on the handle-bar and down-going pedal, and so assist the rear wheel out of the rut. These movements rapidly performed have saved many a machine from smashing when the rider has suddenly come upon a drain running across his road.

Do not ride with a tight chain, have it a trifle slack. On pedalling properly the upper half will keep tight, but when driven badly it will jerk and clank, the usual thing for riders who do not use their ankles, and, as in the case of a chain that is too slack, there will be a loss of power and speed from backlash. When too slack it is liable to mount the cogs and either bend the backforks or break.

In descending a strange hill where you cannot see clearly to the bottom and what is beyond, keep full control over your machine with the brake and do not let it go too fast. Should the hill be very steep, or there be traffic on it, the safest plan is to keep your feet on the pedals until the traffic be passed, in the former case back pedalling, a most valuable auxiliary to a brake, and therefore an art to be practised. In the event of the brake giving way the rider who back pedalled would be able to stop his machine, whilst one unaccustomed to it would probably be unable to catch his pedals, or hold them, and eventually pick himself and the fragments of his machine out of the ditch or some worse place. A good brake and foot-rests enable one after an arduous climb to have the restful delight of coasting down a gentle hill on the other side. I do not think there is any necessity for a brake in level countries, such as Holland and Denmark, or for strong riders or others who do not ride in very hilly districts; they should however practice back pedalling and always keep their feet on down steep hills, but on easy ones in the country, unencumbered by traffic, with a clear view to the bottom, it is a treat to put your feet on the

foot-rests and 'let her rip'; always, however, ready to make a good brake of your right foot by carefully putting the toe against the lower main tube where it joins the fork crown, and pressing the tire with the sole. This is a plan I have followed for nearly two years, and have thus dispensed in my general riding with a brake, but I would not advise anyone who, like myself, is not very strong, to go touring over unknown roads without one, as many of the long down grades on the Continent, require both brake and back pedalling at times, and even where the grade is easy it would be dangerous to ride, unless at a very slow pace, without a brake down a winding road with a precipice on one side, and a wall of rock on the other, for fear of suddenly meeting a team on turning a corner.

Too much care cannot be exercised in crossing tram lines and turning corners, especially when the roads are wet and greasy. These are times when the jerky pedaller comes to grief, so again I say, learn ankle play.

When likely to be out after dark, be sure that you have a good lamp, well supplied with oil, which you can prepare yourself. Put one pint of colza oil in an ordinary wine bottle, then nearly fill it with kerosine, add half-a-dozen bits of camphor, each about as big as a good sized pea. Result—a bottle of clear burning oil, at a cost of 6d. or 7d.

LADY CYCLISTS increase very slowly in comparison with the number of male recruits. The reason is, they stand in awe of 'Mrs. Grundy,' to whom some clergymen and physicians still apologise for bestriding the iron steed, as though there was something undignified in a man who rides one well. Very few ladies in England or on the Continent take to cycling except under the wing of a male relative, and those who do emancipate themselves without such assistance deserve great credit. Lady cyclists are charged by bigots with being unladylike and ungraceful. Why? Simply because their cycling is something new. The next generation will rightly consider anyone who says so a fool. If we had not been accustomed all our lives to see ladies on horseback, we should, I am sure, say with truth that a lady's position on a horse was unnatural, and her holding on by keeping one leg

between two pegs in the saddle, ridiculous, while with elbows squared she bobbed up and down in her endeavours to keep time with the horse. When the horseback riding of the majority of ladies is compared with that of five out of six upon safeties, any unprejudiced person must see that the style of the latter is incomparably more attractive, being the poetry of motion as they glide by with the graceful movements of birds. All ladies who have learnt to ride a Safety declare that it is not difficult, and the *Gentlewoman* says :—'Ladies who have tried dwarf bicycles invariably speak of the ease with which riding on them is learned, and the facility with which they are propelled compared with the tricycle.' If you decide on a safety, learn to ride after the manner prescribed for gentlemen on page 45, before you attempt to mount alone. To dismount, slacken speed to a walk, and when the left pedal is at its lowest, straighten the leg by rising from the saddle and throwing all your weight on it, as you apply the brake and step through the machine to the ground on the left side, with your right foot in front of your left, which should until then remain on the pedal. Practise also dismounting on the other side which may be useful in an emergency. Having obtained proficiency set the saddle as far back as possible, and very low, so that you can drop into it with ease. Place the right pedal a little, say half an inch, forward of its highest position, stand in front of the left pedal which will of course be about half an inch behind its lowest position, grasp the handles firmly and putting your right foot on the right pedal, spring upon it and so into the saddle, at the same time giving the machine a slight impetus forward and getting your foot on the left pedal as it rises.

For the encouragement of those no longer young, I mention that I know intimately a lady over 40 years of age, who learned to ride, mount, turn, and dismount very nicely last summer in less than two weeks, and she was not able to practise every day. A little determination is all that is necessary.

When success has crowned your efforts place the saddle in its proper position, viz., with the peak two or three inches in the rear of a perpendicular line drawn from the centre of crank bracket, and at such a height that you can when

seated in the saddle easily put your foot under the lower pedal. I refer to a properly made lady's saddle, which should be short and broad, about 8-in. each way. Most ladies' saddles are much too long, and in consequence often make the back of the gown appear too short when the rider is in the saddle. To mount a tricycle with 26 or 28-in. drivers, stand behind the machine, grasp the handles—and brake also if on an incline—with both hands, step up on the axle and thence to the pedals, on which, while the cranks are in a horizontal position, you stand a moment to arrange your gown before taking your seat. This is a better plan than passing between the handle bar and one of the wheels because the latter is sure to soil the gown.

The advice about all wool undergarments applies as much to ladies as to gentlemen. The Cyclists Touring Club of England, supplies everything necessary. 'Graphis' the remarkably able sub-editor of the *Irish Cyclist,* and 'Violet Lorne' of *Bicycling News*, kindly advise ladies on cycling matters when written to through the medium of those journals, and doubtless the lady Correspondents of most American and Canadian cycling journals do so also. The skirt of any ordinary dark coloured walking gown is suitable for cycling if the material hangs well, and cannot be easily blown about by the wind.

It is advisable to keep a gown specially for cycling, as oil is sure to reach it sooner or later. Ladies require to be more careful than men in wiping off all superfluous oil after lubricating, and to see that their machines have perfect guards with no projecting points to catch and tear the gown.

Many points for ladies will be found in the articles on 'Cycling for Health' and 'Choice of a Cycle,' as to riding moderate distances, light and loose clothing, &c., &c.

CHOICE OF A CYCLE.—When desiring to purchase, go to a responsible Cycle Agent, or write to a maker of machines known to be of good reputation, but beware of catch-penny advertisements in the Cycling Press, some of which may be recognized by the following style :—

'The Bunkum Cycle Company,

Racers 20-lbs. Light Roadsters 25-lbs. Roadsters 30-lbs.'

'All Humbug' might truly be added, the weight being false by many pounds, and the quality of the machines vile. The business consists in buying so-called 'cheap machines,' which are made of gas pipe and similar material, iron bearings and iron balls, sometimes not even round, the whole thrown together, but often nicely enamelled. These machines are generally listed at the same price as those of the highest grade, and novices are taken in by their fair appearance and the offer of a big discount. I have seen a Catalogue in England in which a Safety ,I recognised as not worth £6 ($30) was listed at £24 ($120). This system was exposed by *Wheeling* in its leading article on 27th November, 1889.

SAFETIES.—A great trap for the unwary is the 'cheap' safety, many of which are like cheap watches, remarkably well got up outside, and to the inexperienced eye are nearly as good as first-class machines. There are good machines at low prices, and I know that many have been built by makers who did not know their cost until they found themselves insolvent, but it is like looking for a needle in a bundle of hay, and almost impossible for anyone not deeply versed in the trade to find them. Watches differ more in price than Cycles. In the one we require above all else regular running and durability, in the other easy running and durability, that is all the difference, the rest is a matter of taste. The quality of the works in a watch fixes its price, and the same may be said of a cycle, using the words 'bearings and finish' instead of 'works.' A man and boy make three cheap safeties per week, but it takes on an average from three to four men in a first class factory, where the work is sub-divided, to make one first class safety. There is also a corresponding difference in the material used. But both maker and agent make more profit out of a cheap safety than a maker or his agent from high grade machines. The two latter, however, work for reputation, and that more than compensates them for the smaller profit, because every good machine sold is a running advertisement, and certain directly or indirectly to bring other customers, whilst the man who gets a so-called 'cheap' or 'green' machine naturally goes next time to another dealer. As an argument against cheap machines, I point to

the fact that no cyclist of reputation, whether on road or path, rides a machine by a so-called 'cheap maker,' although most of the lightest machines at the great Cycle Shows in London lately were made by the latter, and certainly they were very nicely got up for exhibition—and exhibition only.

If you are in doubt, send a list of makers to the Editor of a Cycling Journal, and ask him to mark some of the best, or to name half-a-dozen first-class makers, and then take your choice, which the Editor cannot very well advise, because probably all advertise in his paper, and except for some personal preference, which most up-to-date cyclists have, he will tell you there is no one *best,* although naturally many makers claim the word. It does not follow that firms who make a speciality of path racers have a monopoly of easy running machines, for there are makers of the highest standing in England and America who will not cater for racing men, but it is equally certain that firms who build easy running racers also make easy running roadsters.

Most makers of high class cycles or their agents sell on the hire purchase system, part being paid in cash and the rest by instalments at appointed times. This enables cyclists in receipt of a steady income, but not possessing much ready money, to purchase good machines instead of buying common ones which would endanger their lives, and probably being in constant need of repair, cost far more in the end.

Do not buy a second hand machine without trying it thoroughly, or receiving the guarantee in writing of some first class agent or maker.

Beware of the advertisements of the nobleman, gentleman, or lady who has just suffered a serious loss, or is about to leave the country, and must sell his or her new, or almost new machine at half cost. Only another dodge for selling cheap machines built for the purpose.

When a man is inspecting machines with a view to purchase, he very naturally spins the wheels and pedals to see if they run freely, but these are not tests of the easy running of the machine, which can only be properly tried by a rider in the saddle. Then his weight is upon the bearings, and the true practical test begins, which may thus be carried

out. Ride with a friend as near your own weight as possible, and upon a mount of similar build, that is, weight, tires and chain about the same as yours. Change machines now and then on both up and down grades. In descending, place your feet on the rests at the same moment, running at an equal pace, when, provided the bearings of both machines are clean and properly adjusted, the chains slightly loose, and both machines of the same length, the easiest running machine will reach the level and travel along it farther than the other.

If the bearings of both machines are equally good, the short machine will run the farthest.

There has been a great deal of talk about the long wheel base of safeties during the past year, and some have been built with more than six inches between the centre of the crank axle and the nearest point of contact with the tire of the back wheel. My experience is that with pneumatic tires this distance should not exceed 5-in. I prefer 4½-in. For cushion tired machines it should be less. As regards the front part of the safety, it should be no longer in racer or roadster than to allow the foot of the rider to just clear the steering wheel, or its mud-guard, when turning the machine.

Any length beyond this adds to the weight of the machine and detracts from its speed.

When ordering a cycle, state your weight and inside length of leg, in order that the machine may be suitable for your 'reach,' and a saddle with springs neither too light, nor too rigid for your weight. Particulars also of your age, strength, and nature of roads in your district will not come amiss.

Avoid heavy machines as a useless tax on strength, but do not rush to the other extreme, and sacrifice rigidity, safety and durability, merely for the sake of lightness, nor imagine that because a complete roadster safety, weighing 40-lbs., carries a 12-st. (168-lbs.) rider over any roads, the maker can build one on the same lines, weighing 30-lbs., to carry your 9-st. (126-lbs.); nor that a light roadster safety with 1¾-in. pneumatic tires, weighing 32-lbs., without brake or mud-guards, can without additional weight, be fitted with 2-in. tires,

which weigh nearly 2-lbs. more than 1¾-in., and require wider, therefore, heavier rims. Such requests will appear to many readers as ridiculous as they are, yet they are made continually.

There is a craze now, principally among racing novices, for extremely light machines, notwithstanding the fact that no great race, either on road or path, has been won upon a featherweight machine. Mr. Ede who won the 25 miles Safety Championship of England, for 1892, rode a 26-lbs. racer, although he weighed barely 8-st. (112-lbs.), and Mr. Zimmerman who won the other three championships, for one, five and 50 miles, rode a machine of similar weight, both beating many other first class men on machines specially built much lighter. Mr. W. Windle, whom I believe to be the second best rider in the world on the path, stated in an American paper at the end of last season, 'the proper weight for a racing wheel is from 25 to 27-lbs.' Also all the great road rides from Lands End to John O'Groats, from Brest to Paris and back, and from Bordeaux to Paris, have been won on fairly heavy machines, whilst light ones have either gone to pieces, or been nowhere. How is it accounted for? Why, simply because the very light machines are not safe and do not run rigidly and solidly like heavier ones, but give whenever great pressure is put upon the pedals; whilst at speed, especially upon the road, the whole machine instead of running solidly is vibrating and quivering all the time, thereby reducing its speed, and also 'taking it out of the rider.' Not being a racing man, I have carefully tested these points upon the road, by riding alternately over the same stretch of country a path racer weighing 27-lbs., with 1⅝-in. pneumatic racer front tire, and 1¾-in. roadster rear tire, and a light roadster, by the same eminent makers, weighing without brake and mud-guards, 34-lbs., fitted with 1¾-in. pneumatic front tire, and 2-in. rear tire. I found that running up to 17 or 18 miles an hour, I could do the distance in as good time, and with less fatigue, on the 34-lb. machine with its 2-in. tire, than I could on the racer.

I have before me a number of newspaper articles all deprecating and pointing out the folly of this light wheel craze. *Bicycling News* remarks, 'Shorland, Holbein,

G. P. Mills, C. A. Smith, I. Walsh, (to name no more) never trust themselves to featherweights.'

The *Chicago Referee,* says:—'It was very nice to scorch around on a 26 or 28-lb. machine, but it is a fact that they (the Chicago men), have changed to wheels weighing 32-lbs. and more.'

Mr. Henry Sturmey, the editor of *The Cyclist*, after pointing out that the folly of the present light-weight craze is but a repetition of what occurred and died out in the days of solid tires, says:—"Riders hear of the 32-lbs. machines which some men are riding about the road, and do not see why they should not row in the same boat. They are not, however, acquainted with anything more than the weight of these famous mounts, but having been riders for a year or so, they know a thing or two, and as they do not want the machine for scorching only, they require it to be fully fitted, and so, whilst expecting a machine to come out at a light weight, they still require all the attachments of comfort and safety for road riding, and are disappointed when their machines turn out heavier than they wished. Let us see exactly how they stand in this question of weight. To begin with, we see "racers" spoken of as weighing 21 and 22-lbs., but the average weight of a racer, however, may, we think, be very fairly taken at 26-lbs. Now, it would be manifestly unfair to expect a frame and wheels built purely for racing purposes to carry an ordinarily heavy rider safely over all classes of roads, but just for the sake of argument we will see how a few additions to fit the machine for road work would affect even a racer frame. We will take it that the rider is exceedingly moderate in his requirements, and really wants the machine for road scorching on the best of roads. He desires a light roadster tire to the back wheel. This adds 1-lb. to the weight. A light roadster saddle in place of the racer adds another 1lb. The substitution of rubber pedals for rat-traps a further 1lb. A lightest lamp and bell, oilcan, spanner, and pump will add another 2lbs. to his equipment, and here, on a naked machine, he has added 5lbs., bringing the weight from 26lbs. to 31lbs. Considering, however, that a rider takes the starting point to be a light roadster"

"machine, scaling, equipped for scorching, 32lbs., he makes the following additions and alterations to suit it for his requirements :—

	lbs.	oz.
Roadster tires and rims	2	0
Brooks's B 90 saddle	1	4
Mud-guards and stays	1	12
Brake fittings	1	3
Rubber pedals	1	1
Tool bag	0	7
Two spanners	0	12
Pneumatic pump	0	7
Oilcan, filled	0	2
Single note bell	0	6
"Bell Rock" lamp, filled	1	1

Here we have a trifle over 10lbs. addition to the weight of the machine for what all admit are necessities to the average road-rider. His machine, although a light 32lb. article, now turns the scale at 42lbs., or if weighed during the course of a tour perhaps 43lbs., allowing for the adhering dirt. But so far as the machine itself is concerned, the rider of the naked mount at 32lbs. and the rider of the equipped roadster at 42lbs. are practically bestriding identical constructions. If the average light roadster of the beginning of the present season, weighing, fully equipped for the road, 43lbs. actual weight be taken, and the rider substitutes a larger saddle and adds the ordinary tools and equipments of valise, lamp, bell, pump, spanner and oilcan to the weight, he will find his machine come out, when fitted for running at 49 or 50lbs. ; whilst, should he elect to have, *as we do,* a really powerful bell and a saddle of a larger and a heavier type, a further couple of pounds will be added, and a few ounces more—perhaps another pound—if a lamp of other than the lightest possible is utilised. From this we think we have shown that the weight of a machine depends as much upon what is added to it as upon what is taken out of it, and that when riders have added those items which are necessary for their full equipment and comfort in touring, even a feather-weight mount is brought up to what seems comparatively"

"heavy. In short, one cannot have one's cake and eat it too any more in cycles than in anything else, and riders must be content to sacrifice either comfort and safety or lightness. They cannot have them both. If an extremely light machine is wanted, all the attachments which go to comfort must be abolished, whereas if they fit out their machine with a view to their perfect satisfaction with it, as a machine for comfortable road-riding and touring, they cannot have excessive lightness."

The *Scottish Cyclist* in two leading articles, *Irish Cyclist, Wheeling, Cycling, British Sport,* and, in fact, all wheel papers have dealt with the subject pointing out the folly and uselessness of very light machines.

For a man still agile a safety is preferable to a tricycle. It is not so costly, is lighter, and therefore more easily driven and pushed up hills, has no shaky side motion, requires less room for storage, can pass through any doorway, is carried by boat or rail at about half the cost of a tricycle, and its one track has the pick of the road, while the best of tricycles have three tracks and are generally obliged to take some of the rough and smooth parts of the way together. The safety is easily learnt by some in two or three lessons. There is no danger of falling over the handles as from an ordinary bicycle, or geared front driver, and it is easy to step off sideways. Safeties are generally built with 28″ equal wheels, or 28″ driver and 30″ steerer. Tests made by myself and many of the best riders on both sides of the Atlantic have satisfied me that 28s are the best size for pneumatic tires, which roll much more easily over inequalities than solid tires for which 30″ were invariably used.

I have not been able to discover any advantage in a 30″ steering wheel over a 28″; on the contrary, being larger, it is not so strong, and it lengthens the machine at the wrong end, thus adding uselessly to the weight. The only claims I ever heard in favour of a 30″ front wheel are that it steers better and runs more easily over obstacles. Every properly constructed safety, with a ball head, steers itself when ridden hands off by an experienced cyclist, therefore the first claim cannot apply to good machines. If the

second claim were a fact then certainly those who make it should also have 30″ drivers, which have to carry most of the rider's weight over whatever obstacles are encountered: but no—they prefer 28″ drivers. This large front wheel craze was in full swing 18 months ago, when 34″ and 36″ front wheels and 28″ drivers were commended by many writers; now such machines have disappeared.

Before the diamond frame was invented all safeties were made with cross or T frames: a single backbone, with 'pin' or 'centre' steering. That is, the backbone of the safety is held by a neck with two cones which fit between lugs brazed to the front fork. Should any of the lugs, cones, neck, or backbone of the machine break, the rider is bound to get a terrible fall. All up to date rear driven safeties are now made with what is known as the diamond frame, which is really a pentagon, having five sides formed of straight tubes. The front of the frame should be about ten inches long. The natural application for steering is for the top of the front forks to pass through the tube forming the head of the frame, which, when clipped to the handle-bar by a collar and running upon two rings of small steel balls at the top and bottom of the frame front, form the now generally adopted ball-socket steering. If the forks are inclined at the proper angle a rider should be able to ride 'hands off,' that is without touching the handle-bar for considerable distances. This should never be done where there is traffic.

The diamond frame may be said to have two backbones, and if either the top or bottom main tube breaks—a very rare occurrence—there is no danger of its causing the rider a spill. Some makers place the step below the axle, and the result is that a rider catches his sole between step and nut, and tears the shoe when getting into the saddle: such was my first experience; see therefore that the machine you buy has the step above, or is a continuation of the axle. In high grade machines the stay alongside and just above the step is plated to prevent the shoe from scratching the enamel, and to give it a fine finish. Attention to detail is appreciated by every good rider.

Another point on which the tyro must be cautioned, is the want of 'go' or 'life' which is sometimes experienced in machines, by even good makers, and which is the usual thing with cheap ones. Mr. R. J. Mecredy, who tries a good many machines, says :—'The rider of some years standing, and who has ridden on different machines during that time, will detect this lack of 'life' easily, where the inexperienced rider will blame himself or the roads. The symptoms of the malady become evident when the machine shows a disinclination to go up hill or get through mud with the extra pressure on the pedals. The cause may be one of several, yet very hard to guess which. The most common one is when the back forks are too weak for their work, and yield to the thrust of the pedal, thus causing the bearings to bind ; the whole framework of the machine may be too weak to support the weight of the rider and cause it to whip, and a third cause may be sometimes found in the construction of the bottom bracket, which on hard pressure being applied, may cause the bearings to bind in the ball race if the latter is so built. [A fourth cause may be because the bearings are screwed up too tight, or because they are not perfectly round and the balls 'bite' in one or more places]. "It is very difficult to detect the latter (the third) defect, as the bearings run all right when the weight is off. The only way to deal with a 'dead' machine like the above is to discard it and get another, making sure this time that no such fault exists.'

Every honest maker, will, I believe, remedy or replace such a machine gratis. Riders must remember when faults or flaws are found in machines, that even the best and most vigilant of makers are in the hands of their hundreds of workmen, among whom there is often some rascal who would sooner pass and cover up a defect, than take the trouble to put it right, or even point it out to the foreman.

THE GEARED FRONT DRIVER, known as the G.F.D. and Geared Ordinary, has been very much boomed by one firm and a section of the English Press, consisting of those who formerly rode the old high bicycles known as Ordinaries, for which they still possess an affection which is a mystery to all who have become cyclists upon the lowly safety. This boom

has been greatly helped by the fact that the best all-round rider in England upon road and path did some grand performances on this machine, which was the specialty of the firm for whom he travelled. The geared facile, a lever machine, something like the 'Star' American bicycle, but with a little wheel behind, was boomed without success in the same way by the same firm and rider two years ago, but the public would not have it.

The new machine is finding a number of friends among the old Ordinary Riders, but very few among Safety Riders. Many have tried it, and come off croppers in the same sweet way that they did from the 'good old ordinary,' with a 'ammer, 'ammer, 'ammer on the 'ard 'igh road, to the detriment of teeth and nose. They have sworn off, and are, I think, likely to keep their vows, because even with Mr. Frank Shorland up it did not prove itself the fastest machine, and as he will ride a safety this year I do not think we are likely to see the G.F.D. often over the tape first.

The G.F.D. is certainly not so safe as a safety, and while the majority claim that it is better and cleaner in muddy weather, others deny it even that advantage.

I by no means think it the machine of the future. Its best feature, the dust proof boxing in of the gear wheels, has been discounted in safeties by the introduction of dust proof gear cases.

Its gear consists of cog wheels working into others, all being boxed up in the hub. The favourite sizes are 36 × 20-in, or 36 × 24-in. wheels, geared to 60-in. or 63-in. The Geared Ordinary is about 44 × 20-in. Both machines are made in other sizes.

TRICYCLE.—For men who are not agile, or who intend riding much in busy thoroughfares, the most suitable machine is a bicycle steering Cripper tricycle, with 26-in. or 28-in. wheels. These sizes are generally considered the happy medium; smaller wheels do not roll so well, while larger wheels add considerably to the weight, without any corresponding advantage. Three years ago solid and cushion tires were in general use, but the tire of the future is an *easily*

repairable pneumatic. That should be insisted on. For tricycles, 1¾-in. in diameter is the best size. The weight of tricycle complete, with brake and mud-guards for front wheel, and chain, saddle, satchel, oil can, wrenches, lamp bracket, lamp, and ball pedals, will vary from 45-lbs. to 65-lbs. for riders from 8-st. (112-lb.), to 13-st. (182-lbs.). It does not follow that the lightest machine will be the easiest to drive, and it will certainly not be so durable. For a hilly country, or those who like to ride steadily from eight to ten miles an hour, 48-in. or 50-in. are the best gears. Only scorchers should go above 56-in. The lowest gear is by far the easiest and the most satisfactory for all-round work.

TANDEM TRICYCLE OR TANDEM SAFETY riding is delightful to those accustomed to pedal together, but for others, except over good roads, or with one rider able and willing to do more than his share of the work, they cannot be recommended as giving a fair return for the labour expended; the essential art of 'nicking' together, or driving in perfect unison, being generally difficult to acquire. I cannot recommend either of these machines for husband and wife, my experience being that it is far better for the former to mount a safety, and his wife a safety or light tricycle, and when the wife is tired for hubby to take her in tow, as practised by the Ohne Hast, a celebrated Irish club of ladies and gentlemen, who on their weekly runs use a tow rope, consisting of two pieces of stout cord, with a length of rubber between them, such as used for chest expanders. One end of the rope is hooked to the front of the lady's machine, and the other held in the gentleman's hand. The rubber band prevents jerking.

PNEUMATIC, CUSHION, AND SOLID TIRES.—Until John Boyd Dunlop demonstrated what ease and speed could be gained by covering a wheel rim with an inflated rubber tube, the world had been content to jolt along upon steel wheels, the felloes of which carried only a thin rope of solid indiarubber; and for racing, the desideratum of extreme lightness had only been attained by reducing the dimensions of the rubbers to such an attenuated degree, as to deserve

the description of 'boot laces.' Yet, within five years, so thoroughly has the pneumatic tire revolutionized cycling, the whole world has become familiar with the appearance of the wheels whose thickness was, at first, so strongly in contrast to the cobweb like solid tired bicycle wheels then in vogue, as to attract all manner of facetious ridicule.

It was not only the uninitiated public whose risible faculties were at first excited by the advent of 'German Sausage' or 'Pudding Bag' wheels. Even practical men, expert in cycle riding and cycle construction, failed at first to realize the advantages of the air tires, and so recently as the end of 1890, some high cycling authorities were declaring that pneumatic tires were absurd, useless, and impracticable. But DUNLOP convinced a few Irish cyclists that his invention increased their comfort as well as their speed; and those who doubted the latter on the smooth racing path, even after they had been convinced of their ease and comfort on rough roads, had all their scepticism dispelled by the highly practical means of races being won and records beaten by riders of the erstwhile despised and derided pneumatics. The 'Irish Brigade' took the English wheel world by storm, and from England the merits of the pneumatic tire quickly spread all over the world.

It is remarkable that the very first air tires put to a pair of bicycle wheels, by J. B. DUNLOP, in 1888, were immediately successful; and their details of construction, and even the dimensions, were essentially the same as those now in use. There was the fundamental air tube of rubber, enveloped by an inexpansible canvas covering, with an outer jacket of rubber thickened on the tread, just the same in 1888 as in 1893; the only alterations made since have been improved quality of material, better valves, and a modification to facilitate the detachment of the outer cover for repairs.

For many years attempts had been made to minimise the jolting experienced when riding over rough roads, and all these attempts took the form of steel springs in various combinations, but although they to some extent attained their object, the weight of the machine was increased by the springs and their accompanying joints, and their interposition detracted

from the rigidity of the frame—a rigidity which is essential to economise the power exerted by the rider. But the pneumatic tire absorbed vibration at the best possible point, namely, between the ground and the wheels, so that every part of the cycle was protected from shocks, and yet the frame was kept perfectly rigid, and instead of weight being increased the protection afforded by the air cushions enabled the steel frame and wheels to be built lighter than before, so that although the pneumatic tires themselves may, with their rims, be heavier than solid tires and rims, yet the saving elsewhere renders the total weight of the complete cycle less than before, with equal strength.

But even the earliest friends of the DUNLOP invention never anticipated that its effects upon speed would be so marked as has been the case when ridden upon smooth racing paths. For rough tracks the vibration-absorbing character of the tires could readily be understood, but even now it is somewhat difficult to explain why such tires are so speedy on the smoothest surfaces. But we know that the fact is so, and on the path, as on the road, 'pneumatics are the only wear.'

It is an apparently paradoxical fact that the harder the tire be blown the faster it will travel. This, however, applies only to the smooth surfaces of racing paths; on rough roads a certain degree of appreciable softness aids the speed of the tire.

There seems to be still considerable doubt whether the detachable pattern is as fast for racing as the fixed tire, and at present the concensus of opinion inclines to favour the 1892 pattern for path work. It may be that the detachable variety will be found quite as fast, but the fixed tire is *known* to be so fast that many cracks prefer to rely upon it, and take their chance of accidents necessitating elaborate repairing operations, rather than experiment with the other.

At Christmas, 1890, I wrote: 'Having ridden a number of Pneumatic Tired Safeties, alternating with Cushions and Solids, I have come to the conclusion that the Pneumatic is the tire of the future.' Then 5% of the machines sold had pneumatic tires, now they are over 90%. For a long time

pneumatic tires were very troublesome in consequence of badly constructed valves, and the difficulty of repair, but now, fortunately, they have lost their greatest terror, that of a puncture occurring miles from anywhere, and leaving the rider to push his machine and plod his weary way home, or to the nearest railway station. The advent of 1893 brings every good pneumatic tire into the market with simple means for the cyclist to repair it quickly by the roadside where a puncture occurs, and therefore the fear of using it for touring is now dispelled. Riders should, before starting, make sure that their pneumatic tires are hard, and if not, pump them until but little impression can be made by the thumb upon the centre of the tire. This is a matter which requires judgment. If you pumped your tires very hard and then rode all day under a blazing sun, or left them in the hot sun, or in a high and rising temperature without letting out some of the air they would probably explode through its expansion. Do not ride with the tires in a deflated condition. Sometimes this is caused by a leaky valve, which can be remedied by screwing it and the dust cap tighter. No oil must be allowed to touch it, because oil rots the rubber. Much has been made of its slipping tendencies. With the saddle not very far back I have not found it slip so much as a solid tire, and when it did slip I was always able to keep my seat, I presume from its broader base, and the movement not being so sudden. A simple plan to prevent slipping in muddy weather, is to wind some thick soft string spirally around the tire, tying the string to the spokes at intervals. In mud, steer steadily, and use the ankles well in pedalling. It is the jerky driver who tumbles. The durability of the best pneumatic tires is remarkable, doubtless because they offer so little resistance to obstacles, and by giving way are seldom damaged. A solid tire rushing upon an inch stone in the road causes a violent concussion, which shakes the rider, and injuriously affects his nervous system, whilst a pneumatic tire instantly gives way to the same obstacle, which sinks into it, but, directly the wheel is over the stone, the compressed air within the tire, seeking to force it to assume its natural rounded shape, presses against the stone with

great force, and thus helps the cycle on its way. It is to this resilience, or rebounding quality, that it owes its wonderful 'life,' much of which it seems to impart to its rider, who the faster he rides the faster is inclined to go. This stimulus, aided by the absence of vibration and its consequent nervous exhaustion, enables us to ride cycles fitted with pneumatic tires from one to three miles per hour faster than solid or cushion tires when propelled with equal force. This difference becomes greater towards the close of a long ride, which is not so fatiguing to the pneumatic rider, who also feels in better condition on the following day. The pneumatic makes such small demands upon the nervous system that it is specially to be commended for ladies and delicate persons ; a ride that fatigues them upon a solid or cushion, will on a pneumatic, have an exhilarating effect.

Uphill, when well pumped, it is as fast as a solid or cushion, but going down it is much faster, as it literally bounds along.

After trying the pneumatic tire over two years ago, I could not believe that anyone would give up its easy, luxurious, and speedy motion, for the jolting of solid or cushion tires. Such is now the general opinion of the world, the demand for anything but pneumatics having died out in many parts. Anyone investing in a good cycle, no matter in what climate, will make a mistake to purchase any other tire, except it be a question of price, and, in this respect, a number of the most famous makers will now be happy to meet them by disposing of their solid or cushion-tired stock machines at actual cost price, and, in some cases, at a loss, in order to effect a clearance.

There are many pneumatics on the market, among them some like hose piping, and consisting of one hollow rubber tire, formed by layers of canvas and rubber, vulcanized together and fitted with a valve, which, when the tire is cemented into the rim, passes through its centre, and may thus be filled with compressed air. Experience has proved that such tires are not so satisfactory as those consisting of a separate inner air tube, with a cover of canvas and rubber held to the rim by wires, hooks, or laces, or by gripping its curved edges.

HANDLES of horn or vulcanite have always a nice appearance and are cleanly. Those of cork are the lightest that can be made, very pleasant to hold, and the coolest in hot weather, because they absorb perspiration. They chip unless the ends are protected by ferrules or nickel tips, and get dirty quickly, but can be easily cleaned by a little hot water, soap and soda, or borax. Ordinary rubber handles are not pleasant to hold on long journeys, and have a tendency to blister the hands by drawing the flesh more than others; they are presumed to deaden vibration, but I have not found them do it to any appreciable extent. Those who have that end in view should order Pneumatic Handles.

THE CHAIN that appears to me to be the best for roadsters, is of the open link roller pattern. It presents less surface than any other for the collection of mud and dirt, or for friction, and in the latter respect, if the pins which support the rollers are kept well lubricated, the roller turns with the chain, thereby reducing the friction and allowing the chain to run more freely than the block chain around hubs with eight, nine and ten teeth. It is the general opinion of racing men that for path and road racers, which have but six, seven or eight teeth on their driving wheel hubs to save weight, the block chain gets around more easily, and therefore runs more freely and sweetly in consequence of its shorter links.

To ensure the perfect running of the chain, all the links must be of the same size, the teeth upon the sprocket and hub uniform, made to suit the chain, and the latter in perfect alignment with the course of the machine.

When, as generally the case in cheap safeties, these conditions are not complied with, the cyclist has to work much harder than necessary, and may when going at his greatest speed be violently thrown from his safety, through the chain mounting the cogs and suddenly stopping the machine.

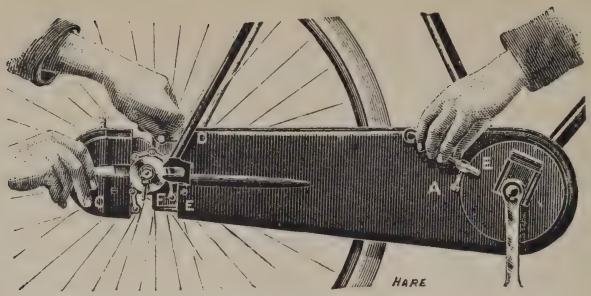
Chain requires even more attention than bearings, and if you fail to lubricate it, and let it get clogged with dirt, it will in revenge increase the work of driving your machine from 20 to 50%. A chain which when clean is a trifle slack and runs to perfection, will, when clogged with dirt, become so

tight as to require great force to make it revolve, in consequence of the layer of dust and grit which forms between the cogs. When your chain is dirty, if time be precious, wipe off as much of the dirt as you can with brown paper, rags, or engineers' waste, brush it with a hard brush which has been dipped in kerosine, and then apply a mixture of blacklead and methylated spirit with an old tooth brush to the links and also the cogs on hub and sprocket. The spirit dries at once and leaves the blacklead, which unlike oil does not attract dust. If no blacklead be handy moisten the edges of the cogs with a drop of oil, 'graphite' for preference, and rub it along with the point of your oil can. The thorough way to clean a chain, and what should always be done before a race, is to take it off, brush it and let it soak in kerosine, afterwards rinsing it well in a fresh lot to get out any dirt that may still be in the joints and between the pins and links or rollers. Then hang up the chain and let it drip during the day. In the evening coil it into a small compass to fit the bottom of some old can, or even a deep saucer and covering it with graphite, sperm, or neats-foot oil, let it soak all night so that the oil may get under the links or rollers and into all the joints. Next morning squeeze as much oil off the chain as you can by running it through your hand, wipe it dry with a cloth kept for that purpose, after which rub the blacklead and methylated spirit well into all wearing and frictional parts, and also on the cogs of chain, wheel and hub. Then put your chain on the machine when you will find a magical change in its running. If after soaking the chain in kerosine, it be, for a few moments only, put on a stove or in an oven, it will dry at once and on immersion in oil whilst warm, the heat will draw the latter into all the joints in a few minutes as it cools, when the chain can be wiped for use without delay.

Chains will stretch more or less, and when one is not removed for some time this takes place in the two parts specially affected by the downward stroke of each pedal. If taken off before it has stretched much, and replaced in another position it will run all right, but if you leave it on a long time and it happens to be a chain that stretches

considerably, the chances are that when you replace it in another position it will squeak and swear at you for some time. Need I say that the chain must be taken off the machine by removing the screw which keeps it together, and at the same time giving one or two back turns to, and holding the locknut with a wrench or a little spanner provided for the purpose. When replacing the chain see that it is just a trifle slack all the way round. If too slack it must be tightened to avoid backlash and the danger of its mounting the cogs. Most safeties have their chains regulated by loosening the two nuts on the axle of the driving wheel, and then fixing the position of the latter by set screws, which pass through the back fork ends carrying the back wheel axle, and press against it. Care must be taken that the wheel is in the centre, or the chain and machine will run heavily, the wheels not tracking, and perhaps forcing the chain to mount the cogs.

GEAR CASES.—During the past year the success which, in Europe, has attended riders of long distance road races who have had their safeties fitted with gear cases has brought them prominently before the public. There are now a number on the market, but the original and best known, and the only patent, I believe, for a case built in order that the chain may run in an oil bath, is that of Mr. Harrison Carter. A number of other gear cases preventing dust and mud from getting on the chain are made with lubricators for keeping the chain oiled. Some claim this plan is as effectual as running the chain in oil, which is likely to take the form of an oil shower bath over anyone lifting the machine into an American railroad car, or carrying it upstairs : in fact, it cannot safely be taken where oil may cause damage. All the Carter Gear Cases I have seen were soldered to the frame, and this soldering is a great mistake, because in the event of repairs being required to the safety, the gear case has to be torn off, and cannot be replaced properly. The following cut illustrates a gear case made in somewhat the same way as Mr. Carter's, but easily detachable, being simply bolted on to the safety frame. Like Mr. Carter's and all the best gear cases, it is made of two thicknesses of the finest tin, with felt or flannel between to prevent rattling.



To change the gear, take out the screw at **A**, insert a piece of stout wire at **E**, and, using it as a lever, turn the circular plate forward from left to right about three quarters around, when it may be removed over the crank. In replacing, set the tab **E** where it was when the disc disengaged itself, turn from right to left, and screw up at **A**.

To remove the back wheel take out the screws on the top of the case at **D** and at the back and front at **E**, slacken the nuts on the back wheel spindle, and the cap **C** may be withdrawn. Before taking the wheel out, tie a piece of string around the loose ends of the chain, so that it may not fall back into the case.

An improvement has been made in this case since the block was engraved, whereby Cap **C** forms part of the entire case, and a small slide in front and a larger one close to the hub, easily permit the removal of the wheel.

Unless a gear case is well made and fitted, it is worse than useless, for it will not keep out mud and dust, and if made of tin—probably one thickness only and no flannel—it will at every motion of the pedals keep up a crink, crink, whanketty, wang, just as cheerful as an old tin can tied to the machine. I know a big dealer who got a lot of cheap cases fitted to safeties and sold them to a club. He said that after a few days the riders, who had dubbed themselves 'the tin pot band,' could not stand the racket of the gear cases any longer, and tore them off. Result: they do not believe in gear cases. I do, and am certain there is a great future before them. Once you have had a days outing on a machine fitted with a good gear case, over muddy or dusty

roads in company with others not so provided, changing machines during the trip to notice the difference in running between a clean well lubricated chain and a dirty one, you will never again be willing to dispense with a gear case on long runs.

MUD GUARDS.—For winter riding efficient mud-guards should be fitted, but they need not be heavy, and should be easily detachable, so that they may be dispensed with in fine summer weather. Mr. F. T. Bidlake, writes:—'A machine is harder to drive at high speed when the wheel is cased in a guard. As the wheel spins it churns the air like a fan, and if there is a guard round the wheel the air cannot circulate freely, so it becomes denser in the neighbourhood of the rim where the guard is. Now, it is certainly harder work to drive a wheel through dense air than through a more rarefied medium. The denser the medium, the greater the friction, and the greater the friction the more work required by the rider to overcome it. Here, then, is the real reason for the marked increase of ease noticed at high speeds to be a consequence of the removal of the ordinary air confining mud-guards.'

Mud-guards are not the cumbrous articles they were two years ago. They are now made of much thinner steel, or of a light framework of wire over which are rubber cloth covers, which can be slipped off and on, like sleeves, in a minute, according to the state of the weather. The wire framework, minus covers, offers no resistance to wind, and a place in the satchel is easily found for the covers when not in use. At the bottom of a wire or steel front wheel mud-guard should be a piece of stout leather, cut pear shape, about 8-in. wide and extending to ½-in. from the ground. This will effectually prevent the mud from the front wheel being thrown on the feet, as commonly the case with the mud-guards in general use, which are not long enough or wide enough for the purpose. It also greatly protects the chain and crank axle from dust in dry weather.

CRANKS.—Seven-inch cranks are suitable for very tall men only, but as many of them can be adjusted down to 5½-inches, each rider can find out what suits him best.

6½-inch cranks are the best for all round road work, and are now to save weight, often made without the slot. In an out-and-home run with a strong breeze one way, slotted cranks may be shortened when travelling with the wind, and the speed thereby greatly increased without extra exertion.

GEARING.—This is an important matter about which so little is generally known that there are cyclists who have possessed machines for a long period, and yet could not tell you to what they were 'geared.' Worcester's Dictionary says: 'Gearing' means 'any series of wheels working into each other to transmit motion,' and gives an illustration of a large and a small cog wheel affecting each other—one turn of the large wheel turning the small one twice, because the latter has but half as many teeth. The small one on chain-driven safeties is fitted to the driving wheel hub, and the large one is the 'gear wheel' or 'sprocket' attached to the cranks. It is so called because by increasing or diminishing its size the machine is 'geared up' or 'geared down' so that each revolution of the pedals drives the cycle over more or less ground.

The principle is exactly the same as with interlocking cog wheels, but the use of a chain as in cycles avoids much noise and friction. Americans use the word 'sprocket' instead of 'gear wheel' and I think it is preferable. As whatever is gained in speed is lost in power, a high gear is only advantageous on level roads, for racing, or for robust riders; while a low gear is suitable for hilly roads, or riders who are not strong, or do not desire to ride fast. The lower the gear, the more moderate will be the pace, and the less the power required to drive it. A high gear on up and down roads necessitates too much 'plugging' or hard work. To find the gearing of a safety or a tricycle is a rule of three sum. As the number of cogs on the driving wheel hub, (or axle of a tricycle), say 9, is to the number on the crank wheel, say 18, so is the height of driving wheel, say 28 inches, to the answer, 9:18::28=56 inches. That is, every revolution of the pedals will drive the machine a distance equal to that made by an ordinary bicycle 56-inches high.

Multiply the gearing, in this case 56-inches, by 3·1416

to find the circumference, and it shows that the cycle thus geared travels 14-feet 8-inches at every revolution of the pedals. In making this calculation do not take the size of your wheel for granted because it is called 28-inch. Some wheels called 28-inch, only measure 27-inches, which would cause an error of over 3-inches in the gear. Wheels frequently vary in size in consequence of differences in the tires or rims.

Agents who ought to know better often do cycling a great injury by selling highly-geared machines to beginners. Then the riders find cycling too much like hard work, even after practice, which the agent tells them will make it easy. Knowing nothing about gearing they blame cycling, sell their machines at a loss, and dissuade their friends from trying it. With suitable machines, geared between 44″ and 52″ delicate ladies and elderly gentlemen can, after a little practice, ride from six to nine miles per hour with comfort and ease on fairly level roads.

High gears are, generally speaking, a mistake. One of the strongest and most successful professional riders in England found 60-in. to suit him better on a solid tired safety *for the path* than anything higher. With the pneumatic higher gears can be used. The best all-round gear for roadsters is 54 to 56-in.; for ladies who use shorter cranks, 48 to 52-in.; for strong men who do not live in a hilly country, 57 or 60-in.; light roadsters, 57 or 60; the latter for road racing or grass tracks. Pneumatics for the path, 63 to 66-in.

It is a great satisfaction to know that the above advice as to gearing which I gave word for word in my 'Points' over two years ago is now admitted by all the best authorities to be correct, and does not require the alteration of a single figure. It was by my advice that Mr. Zimmerman used 64-in. gear in the one and five miles English Championships, both of which he won, beating all the best men in England, only one of whom, I understand, had such a low gear; most of those used being 68, 72, and even 80-in. Immediately after that race three or four British Journals published leaders upon the advantages of lower gears, and

I cannot do better than quote verbatim an article by Mr. T. A. Edge, editor of *British Sport*, one of the most famous of English road record breakers. It is dated 13th December, 1892, and bears me out in every point I advocated so long ago.

> "The gearing of machines has always been a debatable question, from the fact that what is one man's meat may be another man's poison; or in other words, the gear which may be just the thing for one rider may not be at all suitable to another. We have tried almost every conceivable gear from 55-in. to 72-in., and our opinion is that for the majority of riders, even on fast roads and with light machines, a low gear will give the best results, and more particularly for very long distance rides. The lighter in weight the machine the higher gear it is possible to ride; but in no instance have we found anything higher than 64-in. give good results for any distance over 50 miles on an out-and-home course. Even in road racing we question very much whether fast pedallers would not get faster work from a 60-in gearing. It is not the down-hill rushes that puzzle the road rider; it is rather the desperate bursts up-hill and against the wind, and here, surely, a low gear is useful. For record-breaking, where a steady pace only is necessary, and where all out sprints are not needed, a 63-in. or 64-in. gear can be used; and for riding in front of a gale even higher. Shorland rides a machine geared to 63-in., and most other road scorchers do the same, and no men, so far as we know, have been able to do any very big performances with higher gears. Howard, in 1891, who not only lapped his opponents in the Surrey B.C. ten miles scratch race, but also did the best fifty miles road times of the year used a 60-in. gear, and it must be remembered that his rides were accomplished on the fastest roads in the kingdom. We do not mean this article to apply merely to road scorchers, but rather intend it for touring men; but in quoting the above facts about our fastest men—who are trained to propel almost anything, who ride safeties divested of mudguard, brake, tool bag, lamp, and luggage—it naturally appeals to the merest tyro that a safety so weighted, must, for the comfort of the rider, be geared much lower than the machine of the road-racing cyclist. Then, again, the roads on which the tourist rides are not those frequented by the road scorcher; they are, as a rule, much harder to negotiate. More pleasure will be obtained by the tourist who jogs along to see the country, and wishes to do so in the most comfortable manner, by riding a gear never higher than 57-in. High gears are a delusion and a snare, not only to ordinary road riders, but

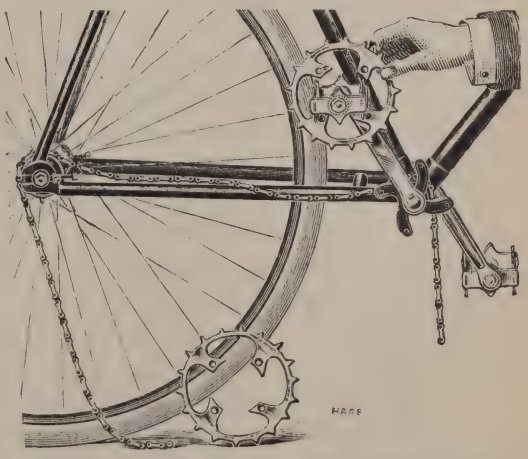
sometimes even to road and path-racing men. No one demonstrated this fact more than Zimmerman, who, whilst using 64-in. gearing, was still able to beat easily, men who propelled machines geared much higher. Nothing tires a man more than hard continuous plugging uphill and down, and this is what a high gear necessitates."

Attention was also at the same time drawn to the fact that Mr. Zimmerman's machine was fitted with a changeable sprocket which enabled him in five minutes to lower his gear from 68-in. to 64-in. It was I believe the only machine so fitted in those races, but since then a very large number have been fitted, and I believe changeable sprockets will come into universal use for roadsters as well as racers.

The changeable sprocket first came under my observation five years ago, when I at once saw its advantages and ordered a machine so fitted, with a detachable link in the chain and an extra gear wheel with two less teeth, which enabled me when in poor health, for winter riding, or in a hilly country to gear down six inches.

The accompanying illustration explains this changeable gear, the parts for which every maker can obtain from the patentees at a very small price.

The four arms are steel stampings forming part of the crank axle. The periphery of the gear wheel or sprocket is lifted over the pedal and crank, and fastened to the arms by four bolts. The chain is then connected, and the whole operation is completed in five minutes, there being absolutely nothing to work loose, as there is no side strain, and nothing to get out of order.



A pneumatic roadster safety can be driven more easily with a 3-in. higher gear than a first-class solid tired safety

of equal weight. The cushion tire has also a great advantage over the solid tire in that respect, the rule being the greater the resiliency of the tire the greater ease in running.

Wheeling wrote two years ago 'We have been riding a 24-lb. solid-tired machine, of the highest class, alternately with a 38-lb. cushion tire, the latter goes faster by far, and as regards comfort there is no comparison between the two.'

Mr. Sturmey of the *Cyclist* says 'Mere lightness is nothing, as that can always be attained by a sacrifice of strength, which must on no account be permitted seeing the important part the gearing occupies in the machine.'

One great advantage in possessing a machine fitted with a changeable gear arrangement is that should at any time health, roads, or climate satisfy you that the gearing is too high or too low, you can send to the maker $2 or 7/6 and get a sprocket for the gear desired, with a detachable link for the chain, and fit it yourself without trouble, but if your machine is not so fitted you must get a new crank axle with chain wheel, the fitting of which is a difficult and tedious operation, and should be done by a mechanic.

ELLIPTICAL SPROCKET.—Favorable reports having been sent to me from New York about the elliptical sprocket, just after Johnson's record ride, I obtained and tried one, but have been unable to discern any advantage in it. I have the like reports from a number of friends, whom I induced to try it against a similar machine fitted with a round sprocket. At speed, when the irregular motion is more noticeable, it is decidedly unpleasant, and interferes with the regularity of the pedalling. It was doubtless on this account that it was after one trial at once discarded by Mr. Zimmerman. Johnson himself is now (according to the American press) against its use.

BRAKES.—A good brake is a necessity for every roadster, whether safety or tricycle.

A perfect Band brake would be better than any other were it not that it seems impossible for makers to invent one that will keep in order and act efficiently on a safety for any length of time. I thought I had discovered a perfect one, two years ago, but after a time it failed to work without being

carefully adjusted by a mechanic every little while, and the extra weight to the spoon brake, about 2-lbs., was another objection, so I gave it up, and now generally dispense with a brake altogether for reasons stated elsewhere.

A spoon brake to be effectual should be about 3-in. in length, slightly turned up at front and back, with a perfectly smooth under surface, for the least irregularity in it will tear a pneumatic tire. A new kind of brake consists of two pieces of rubber like small pedal rubbers, about an inch apart, which, when pressed by the brake lever, are forced against both sides of the tire. I have not yet had an opportunity of trying this kind, but a French dealer, who had some in stock, told me they were no better than a good spoon, whilst a great Irish authority says they are superior.

Any ingenious amateur possessing an unsatisfactory spoon brake, can easily improve it by making and fitting over it a leather or rubber shoe.

A brake spoon, or other arrangement for that purpose, acting upon the top of the front tire, should be connected with the brake lever by two rods, or a rod and tube, adjustable to any length, and the best kind are made with the upper one, the plunger, (jointed to the brake lever) screwing into the lower one, a tube, which, with the spoon forms one piece, and is further secured by a lock-nut to prevent the possibility of its slipping under the greatest pressure. One of the best spoon brakes is connected with the front fork by shackles, which, when the brake is applied, throw it forward flat on the tire which it presses with its entire length. When the brake is released, a spring draws it up, so that plenty of clearance is left for mud and dirt. Whenever you alter the height of your handle bar, carefully adjust the brake also, or the spoon will be too close to the tire for clearance, or too far away to be effectual.

I have little confidence in a brake which does not have the rods screwed into each other, but connected by a clip, because the strain put on the latter down a long hill, combined with the jolting, sometimes loosens it, rendering the brake useless at critical moments and causing serious accidents.

Whatever the brake may be, men who are in the habit of putting it full on suddenly, without necessity, cannot be too strongly condemned. A spoon brake, suddenly jammed hard on, damages and loosens the rubber, and is liable to bend or break the front forks; whilst to do so with a band brake will strain the spokes, whether of safety or tricycle, and also the axle of the latter.

BEARINGS.—Do not buy a cycle that has not ball bearings to all parts connected with its propulsion, for without them, and good ones too, it is impossible to have an easily running machine. When cycles were first invented the smooth surface of the hole through the centre of the wheel hub, pressed directly for its whole length of seven or eight inches upon the axle, as at present in carts and carriages. The great friction thus caused has now in cycles been reduced to a minimum, by resting all the weight upon a number of steel balls, which revolve with the wheel or crank axle in the following manner:—Two grooves are turned around the axle near the ends, so that when it is passed through the hubs the grooves come directly opposite specially hardened cases, or discs of steel. The spaces between the latter and the grooves in the axle are filled without crowding by say 20 steel balls; ten on the right side of the hub being kept in position by a fixed cone on the end of the axle, which, with the ten balls on the other side are adjusted to a nicety by a movable cone threaded on the axle. As the wheel and its rider are thus supported, it can be readily understood that unless balls, discs, cones, and axle are made of the very best and most suitable material, and finished to perfection by skilled workmen, the machine will not run well, nor the bearing last long, under the heavy load which has to be carried on such a small surface over bad roads, every bump on which doubles the weight of the burden.

The steel balls used by first-class makers are carefully gauged to the 1000th or 2000th part of an inch, so that each ball bears exactly the same weight as its neighbor, whereby easy running and freedom from breakage are secured. In a complete first-class safety there are generally more than a gross of balls.

We all know that dust and dirt get everywhere, and that no matter how well made a machine may be, dirt will get into the bearings, especially after long runs over dusty roads, and unless removed the balls become clogged and the running of the machine impeded. To rectify this suspend the machine, and then while squirting or pouring kerosine into the bearings, make the wheels and crank axle revolve until the oil which comes out at first black with dirt appears its natural colour. Use plenty of kerosine and if of an economic turn, you can catch it as it issues from the bearings, and after allowing the dirt to settle, use the top part again for bearings or chain. If the bearing has become so clogged with dirt that the kerosine will not run through it, loosen it, and if that is not enough it must be taken to pieces and carefully wiped, including each ball. This job I strongly recommend amateurs to place in the hands of a competent mechanic, unless they possess some knowledge of engineering, or plenty of time, patience, and a determination to be very careful in adjusting the bearings in accordance with the directions given below.

One of the simplest and best devises for keeping dirt and mud out of bearings is to put a piece of chenille tightly around each one and fix it there with a twist of the wire upon which it is made. It will last a long time, and keep all grit out of the bearings. *Scottish Cyclist* says its experience is that after a long and soaking ride the bearings run as free and clear as ever.

Pedals frequently get choked, but fortunately are easier to manage. By loosening the cones the dirt can be freely washed out. When the bearings are cleaned put just two or three drops of graphite, sperm, or neatsfoot oil into each oil hole. Do not forget the joints of the brake, etc., and the steering apparatus; if a socket with springs to top and bottom, squirt the oil among those at the top, then turn the machine upside down standing it on its saddle and handle-bar and pressing the frame up and down near the socket, oil it well. My son aged 12 rides such a machine without hands and he is not specially expert.

Some of the bearings, especially those of a safety, are

subjected to a much greater strain than others, and therefore require more frequent adjustment. The *least* strain and wear is upon steering wheels, which should run 2,000 miles without attention. The most uneven wear is upon the cones (the cases which hold the balls) of the driving wheel axle, particularly on the chain side. These bearings will last much longer and wear more evenly if occasionally, say after the first 500 miles and every subsequent 1,000 miles, the chain is removed, the two outside nuts holding the frame are slackened, and the *cones and axle together* given a quarter of a turn in the frame, so that those portions of the cones and axle which were at the bottom will be at the side. Then take up the wear by turning the loose cone from left to right on the threaded part of the axle with the fingers, till you feel it is tight, then turn it *backward* about a quarter of an inch, and, ninety-nine times out of a hundred, the adjustment will be perfect. When the fingers can move a wheel sideways sufficiently to make a shake just perceptible, the bearings are all right and the balls running freely, but when the wheel can be freely shaken, the bearings require tightening and not before. If the adjustment does not prevent it, something else is wrong, and you should take the machine to a competent repairer.

The crank axle bearings require still less adjustment. First take off the chain, and do not replace it in this or the above case till the bearings are adjusted; then slacken the binding screw with lock nut which clips the cones. Only one of the latter must be moved in most safeties: the one on the *outside furthest* from the gear wheel. Turn it with the pronged wrench from left to right, as above, till tight, and then backward about a quarter of an inch, when the cranks should run freely.

Carefully tighten the bolt and lock-nut, otherwise the bearings will work loose. *After any adjustment the cranks or wheels must be spun, to see that they run freely; if the cone has been screwed up too much, it will clip the balls and break them. Should, therefore, any sign of stiffness or resistance be shewn, the bearing must be slackened until the running is free.*

And now, having told you how bearings are adjusted, let me strongly impress upon you the advisability of letting them alone,—except when they actually require attention as in the case of a broken ball, which should at once be removed or it will probably destroy the bearing, the other balls doing duty till you can get another,—and resisting the temptation, which appears to be as strong in many cyclists as it was in Helen's Babies, of pulling things to pieces to see how the 'wheels go wound.'

CLEANING.—Rust is a demon always lying in wait for cycles. The best defence is, even in summer, after having well polished and freed the bright parts from all trace of oil to give them a coat of Silico enamel, applying it with a camel hair brush in a warm room. In winter add a little rust preventive to cover up any places you may have missed with the Silico. Mud will not affect the machine if you clean it and give the bright parts a coat of vaseline or rust preventive about every three or four weeks. Rain water causes rust much quicker than mud. After being in a shower a machine should never be put away before all the bright parts, if not coated as above, are wiped with a dry cloth or one that is greasy with paraffin. Mud is more easily removed when wet. Cleanse the machine with a wet cloth, but do not 'sluice' water over it, or turn on the hose, unless you have been in such a downpour that you cannot make the bearings wetter than they are. In the latter case after the machine is clean, run kerosine through the bearings, let them dry and then put in plenty of machine oil, and spin the wheels and cranks.

If your machine is not Silico enamelled, you can polish the nickel with any kind of plate paste or whiting and a piece of chamois leather. The latter alone is sufficient for Silico. Finish off by rubbing the black enamel with a kerosine oil rag.

When there are any signs of rust about the ends of the spokes near the rim, where it is first likely to come, or other parts, touch them up with enamel.

OILING is necessary about every 100 miles when riding over good roads free from dust, but in muddy or dusty

weather probably every 25 or 50 miles would be advantageous. Put two or three drops into all the bearings and include hubs of wheels, crank brackets, ball socket or centres, pedals, balance gear of tricycle, axle, and the bearings on the latter, and all joints connected with the steering, brake, etc. Then, if no black lead and methylated spirit be handy, rub with the point of the oil can just sufficient graphite or other lubricant upon each cog of hub and gear wheel to moisten it wherever the chain can touch.

The man who does not keep his chain in good condition, and bearings clean and oiled, has a hard road to travel when cycling with his friend the careful man, who, having attended to them, rides with ease.

Whilst oiling your machine always try with your fingers all the nuts and bolts to make sure that none have worked loose.

Extra care bestowed upon a horse or a cycle is in both cases amply rewarded by their better condition, resulting in more satisfactory work besides keeping up their value. It has often astonished me that many celebrated road riders care so little about the outward condition of their machines, riding them for weeks over dirty roads until they are encrusted with mud and rust. I have a shrewd suspicion that if some of the machines upon which a famous rider has had more than his share of accidents could speak they would attribute some of them to this cause. A man who rides hundreds of miles without giving some attention to his machine, overhauling nuts, screws, chain, etc., courts disaster.

TOURING and the Cyclists' Touring Club are to me inseparably connected because one of the first things I did on becoming a cyclist was to join that institution. The club has thousands of members in all parts of the world. Its secretary is Mr. E. R. Shipton. The chief Foreign Consul Mr. T. A. Stead, an able linguist, possesses a mine of information always at the service of members touring on the Continent. The offices are at 139 and 140 Fleet Street, London, E.C. The club has members holding the honorary position of Consul in nearly every town in the United Kingdom, and most of the large cities of Europe, who will be

pleased to give advice and information to all enquiring members. The admission fee is 1/-, and the annual subscription but 2/6. For the latter small sum a member receives the Monthly Club Gazette free in any part of the world, and has the privilege of staying at the C.T.C. Headquarters in every town in Great Britain and Ireland, generally the best Hotel in the place, at a special tariff which saves him the amount of his annual subscription every 24 hours; there is no charge for stabling his machine, and he is entitled to the club tariff when not cycling. The club publishes a 1/- handbook and guide of the United Kingdom and a Foreign edition at the same price, also English and Continental road books, all of which are supplied to members only.

Although the Club tariff does not apply abroad, I found that the production of my ticket and a few words of explanation, had a magical effect in reducing the charges of first-class hotels in France, Switzerland, and Italy.

THE CLOTHING of Cyclists, both under and outer clothing, should, summer and winter, be all wool, linings included, and as light as possible, compatible with warmth. Not even a bit of linen on the shirt collar for the owner's name, or after a hot ride it will be the one chilly spot.

When the party of American Cyclists were in England some surprise was expressed at their riding in their shirts. I confess that I have always done so in hot weather, in the country, both at home and abroad, putting on my jacket before entering a town. It is quite the thing to play cricket, lawn tennis, etc., without a coat in the presence of ladies; why then should we not thus cycle when it is so conducive to comfort? However, a thin merino coat will save appearances and can be exchanged for a woollen jacket whenever you stop, and so prevent catching cold.

The question of what to carry on a tour depends so much upon the country and season that it is difficult to advise generally. For spring, summer, and early autumn the following should suffice:—a gossamer waterproof cape, change of underclothing, slippers, toilet requisites, pair of thin trousers, celluloid collar and cuffs, stockings and handkerchiefs. These can be tightly rolled up in a waterproof

hold-all and firmly attached to a luggage carrier either on the handle-bar or front fork. A hold-all designed by me five years ago, is I believe the cheapest, lightest, and most compact. It can be obtained from cycle agents, or made at home in the following manner. Get a piece of waterproof that will not stick in hot weather, size 36 by 24 inches. Cut off 36 by 15 inches, and bind the edges. From the remainder cut two round pieces nine inches in diameter, bind and sew them to each side of the first piece, commencing nine inches from its end, until you have sewn a little more than half way around the discs. In the centre of each unsewn portion of the discs sew a piece of black tape. Put your baggage in the bag thus formed, tie the two ends of tape across the top to keep it neatly in, tuck the nine inch flap over, roll up the hold-all, and put it on the carrier, where a couple of straps will secure it.

DRINK AND DIET.—Drink but little immediately before or during a ride. The more you drink the more will you perspire, become uncomfortable, and liable to catch cold when you stop, and the greater will be your desire in a short time to drink again. A little determination will overcome thirst, as well as other things, and you will soon be accustomed to travel long distances without 'liquoring up.' In hot weather it is most important, for that reason in particular, to keep your mouth shut, as when open it quickly becomes dry, while the cold air injures the teeth, and causes colds, etc.

Should the mouth become dry, rinse it, and gargle the throat with cold water, swallowing a few drops only. Putting the wrists under the pump or tap for a minute is very refreshing.

The most suitable beverages for cyclists are bouillon, lemon squash, (not manufactured lemonade), soda, or stone bottle ginger beer and milk mixed, ginger beer and beer mixed, cocoa, tea, or coffee, either of the two latter being most refreshing after a long ride. Wine, beer, and spirits are too heating.

Do not ride immediately after a meal, eat sparingly if you are touring or riding long distances, until the day's

riding is done, then, after a sponge down with tepid water and a good rub with a rough towel, it will be more enjoyable. Good ripe fruit, however, I make an exception, as I have never found that I have eaten too much of it when touring. Tea with meat is a cause of indigestion to many.

The French style of living I found the most suitable. Roll and butter, coffee or chocolate early, and off at 7 or 8 a.m., riding till 11 or 12 without a drink unless a very hot day, then bouillon with plenty of bread in it, or bread and milk, sometimes cutlets; rest till 2 and stroll about sight-seeing. Then on again till between 5 or 6 when I finished the day's run, and about 6-30 p.m., I always found an excellent *table d'hote* dinner at the inn in every little town where I stopped, which, with the wine of the country included, was enjoyed with a relish never equalled elsewhere. On such diet during four weeks touring in France, although 5-ft. 9-in. high, weighing 11-stone 7-lbs., (161-lbs.) I lost 1½-inches round the waist, gained 1¼-inches in chest measurement, and added a little to my weight.

THE LAWS AND REGULATIONS in the United Kingdom affecting cycling are increasing and being more strictly enforced as years pass by. This is due in a large measure to cyclists who, taking no pride in the pastime that affords them so much pleasure, act as 'road hogs' with an utter disregard for the feelings of those who walk or drive.

It is a great shock and very exasperating to anyone walking along a road when a cycle bell is suddenly and violently rung close to him; fear makes him jump aside, and a feeling of annoyance and irritation is left as the cyclist rushes by.

The English law requires cyclists to give warning of their approach when overtaking horses, vehicles, or foot passengers, and it engenders good feeling towards the sport, and prevents many collisions when *timely notice* is given. This should also be done when nearing crossings,—someone may be just coming around the corner.

Do not pass between two vehicles; on meeting keep to the left; overtaking to the right; give horses a wide berth,

and do not take the ground in front of them until ten yards ahead.

> The rule of the road is a paradox quite, by going to the *left* you are sure to go *right*; but if you go *right* you go *wrong*.

In the United States, Canada, and most foreign countries the opposite is the rule.

When meeting or passing restive horses, dismount if desired by the driver to do so, and in any case ride slowly. Always pass a led horse on the side of the man leading.

When riding in company the one on the right should fall to the rear on the approach of a conveyance, but in America the rider on the left should do so.

'A pedestrian has a right to walk in any part of the road, and is not governed by any rule' said a Judge lately from the bench.—Cyclists must therefore be careful to avoid foot passengers or suffer for it. On the Continent there are in many places laws against riding in towns.

It is forbidden to ride upon footpaths in England, but permitted in many American cities and in Irish rural districts unless an obstruction is caused.

It seems that in England it is even illegal to wheel a safety along a footpath, although I have done so unwittingly under a policeman's eye, and without reproof.

In England every cyclist must carry a lamp, throwing a light in the direction he is going, from one hour after sunset until one hour before sunrise.

Fast riding is punishable, so if you 'scorch' look out for the 'bobby.'

CYCLING FOR HEALTH.—Whilst cycling is a popular recreation for the youth of both sexes and all ranks, it is not understood by numbers who have reached or passed middle age, and suffer from some of the common complaints at that time of life, to whom cycling would prove a blessing, bringing with it renewed health and strength, if they but knew how to use it properly. For them, cricket, football, or lawn tennis, require too much effort, and their exercise is confined to walking, driving, or a gentle ride on horseback. Yet in most cases, none of these is so beneficial as

the cycle when used with judgment and in moderation. For such sufferers and those who, while not aware of any particular ailment, 'do not feel well,' to use their own phrase, I now prescribe, and not for the strong and healthy, or the youthful 'scorcher' whose object is to ride as many miles as possible within the hour, or who tours through the country at the rate of 80 or 100 miles a day without seeing anything except the road before him.

Dr. Oscar Jennings' 'Cycling and Health' is the most comprehensive work ever printed on this subject. The book is of such great value, because, besides being the work of a renowned cycling doctor, it contains a resumé of much authoritative opinion on the subject. I extract the following passages:—

'Half the chronic diseases from which we suffer are absolutely and wholly curable by exercise and diet, yet there is not one physician in a hundred who preaches this truth to his patients. The latter are so accustomed to expect health from physic, that it is necessary to preach and persuade them to the contrary.'—Dr. Oscar Jennings.

'There are but two remedies for nervous diseases, air and exercise.—Dr. Abernethy.

'No man who eats can be in good health unless he exercises.'—Hippocrates.

'Exercise will evacuate all bad humours.'—Galen.

'If everyone took suitable exercise at the proper time, physicians and medicines would be no longer required.'—Avicenna.

'Whoever examines the accounts handed down to us of the longest livers will generally find that to the very last they used some exercise, as walking a certain distance every day, etc. This is mentioned as something surprising in them considering their great age, whereas the truth is that their living to such an age without some such exercise would have been the wonder.'—Dr. Jennings.

The following are also noted authorities:—

Dr. Meldon, of Dublin, President of the College of Physicians, the oldest and heaviest cyclist in Ireland and probably in the world, for he weighs 27-st. (378-lbs.), and

rides a tricycle, writes to the *Irish Cyclist*—'In my opinion there is no exercise more healthful or which tends more to ward off disease than cycling. This is particularly the case with regard to both gouty and rheumatic affections. This class of disease is caused by the collection in the blood of an acid which one atom of oxygen would render harmless; also by depression of the nervous system. Cycling is a perfect antidote to these causes.'

The late Dr. Hoggan, of Beaulieu, the C.T.C. Consul for Monaco, suffered dreadfully from varicose veins till he became a cyclist, when after a time they disappeared. Drs. B. W. Richardson, Tissié, Cresswell and others are quoted in 'Cycling and Health,' to shew that cycling never causes hernia, and that those who have it may ride; that hemorrhoids disappear after a steady course of cycling to re-appear when it is discontinued; that it has a wonderful effect in cases of gout, rheumatism, partial paralysis, stiffness of the joints of the leg in a man 70 years old, obesity, pulmonary consumption and even heart disease. In the two latter cases patients should not ride without the advice of an experienced cycling physician.

Dr. S. Egbert in the *Universal Medical Magazine*, writes: 'It is with the feeling that cycling is to have an increasing influence on public health, that, after a practical experience of several months, the writer ventures to note the various relations between the doctor and the silent steed. I say after a *practical* experience, because I have found that that decidedly modifies certain notions and theories that I, along with others unused to the riding, formerly had. And, though it is hard to speak without enthusiasm of that which is really a delight, I shall try to put down the facts exactly as they are.

In the first place, as an exercise cycling is superior to most, if not all others, at our command. It takes one into the out-door air, is entirely under control, can be made as gentle or as vigorous as one desires; is active and not passive; takes the rider out of himself and the thoughts and cares of his daily work; develops his will, his attention, courage and independence, and makes pleasant what

is otherwise often most irksome; moreover, the exercise is well and equally distributed over almost the whole body, and, as Parkes says, when all the muscles are exercised, no muscle is likely to be over-exercised. This general muscular exercise also has its direct effect upon the other and vital organs of the body, the heart, lungs and digestive organs especially; and the improvement in general health and digestion after a few weeks riding, is by no means illusory or fleeting. We all know that the trouble with many of our patients is purely functional, and that their maladies have been brought on by lack of pure air, too little exercise and too much mental worry over their work or business. For these the bicycle furnishes an agreeable remedy.

Take a case of nervous or anæmic dyspepsia, of hepatic or intestinal torpor; the increase in the flow of the blood current, the gentle vibration and the additional elimination of waste matters through lungs and skin, all results of a ride on the wheel, are just what we desire for the cure of our patient. Or with one of a tuberculous diathesis or with incipient phthisis, how much depends upon teaching him to breathe properly, *i.e.*, fully and deeply, and to spend much of his time in the open air. This, the bicycle will do for him, perforce. Cases, also, of neurasthenia, melancholia, and other nervous troubles, will derive much benefit from our present hobby, for in addition to the above hygienic elements, the wheelman must develop—whether he will or not—his will, his independence and self-reliance, and the accurate control of all his muscles. Those of rheumatic tendencies, especially, will find that regular and systematic riding will do much to keep the disease in abeyance, and even to act as a cure. Some one has said that every muscle is a little heart, and, surely, no better means can be devised of eliminating deleterious waste matters from the whole system than the general and active use of all the muscles, voluntary and involuntary. In this connection, permit me to quote the testimony of Dr. W. G. Staples, formerly a prominent medical officer in the Royal British Navy. He says:—'My rheumatism used to come on periodically and last for six weeks at a time, during which I could hardly

stand on the floor, nor sleep in bed without feet and legs elevated. Since I adopted cycling as an exercise, and thus found pleasant means to keep my skin in working order, I have never had a single twinge of rheumatism. Cycling has banished my pains and lightened my mind, and made me, physically and mentally, double the individual I was.' Of course, this is only an isolated case, but dozens of other erstwhile sufferers could give similar favourable evidence.

And it is in these respects that the wheel is destined to be of great benefit to women. It gets them out of doors, gives them a form of exercise adapted to their needs, neither too violent nor too passive; one very pleasant withal that they may enjoy in company with others or alone, and one that does go to the root of their nervous troubles; for we are beginning to realize that these do not, for the most part, have their primal origin in woman's peculiar anatomy and physiology. Even the orthepædist may employ the wheel with benefit in certain cases, as by proper adjustment of the parts more or less work may be given to the limbs and muscles of either side. Other conditions might be cited, did space permit, wherein we might look for decided benefit from the proper use of our machine, but these will, I think, be sufficient to indicate that we have in it one of the therapeutic means for which some of us have long been looking.

might here note that in a recent and extended article on 'Physical Education,' Sir Frederic Treves speaks very highly of cycling as an exercise.

Of course, I have been presupposing in all my previous remarks that the rider will have a wheel adapted to his or her weight and strength, properly adjusted in all its parts, but especially in the relationship between the saddle and handle bar and pedals, and above all, that the rider takes pains to maintain a correct position and to do all he can to benefit his health and bodily development. In fact, I am confident that it is through neglect of some of these important points that the evils unjustly attributed to bicycle riding arise. There can be no question as to the erect posture being the correct one, and if this be maintained, cycling *does* 'tend to develop the chest' by increasing the

lung capacity, 'and to exercise the muscles passing from the trunk to the upper limbs.' But if a tall, lanky lad with a narrow chest and a stooping back, or any other person persists in maintaining a posture resembling a half-opened jack-knife, the faults and evils resulting therefrom cannot fairly be attributed to the use of the wheel. It requires muscular effort to sit erect, on a bicycle or elsewhere, and that effort means, as everyone knows, the continued exercise of all the muscles of the back and neck. The arm muscles are brought strongly into play in hill climbing and whenever the speed is considerably increased, and the augmented depth and frequency of respiration that even a minimum of exercise induces makes a new demand upon all the chest muscles and the diaphragm.

On the other hand, an improper position, especially the one so commonly seen, not only does tend to cramp the chest and to interfere with the proper oxygenation of the blood, but by compressing the iliac vessels it also interferes with the flow of blood to and from the lower extremities, whose muscles are all being most actively exercised and therefore most in need of an unimpeded current at this time. Certainly the gain of the few seconds per mile that this incorrect position is supposed to give cannot in any measure compensate in ordinary riding for the physical harm it must induce. I am aware that other objections have also been urged against the use of the bicycle, and it will not be out of place to refer to what may seem to be the graver of them. Undoubtedly, the excessive use of the bicycle or tricycle by very young children is not advisable. Bad habits of position and carriage are only too readily acquired at this age, and there is danger of serious muscle strain and possible nerve injury. Another fault is that parents too often purchase a machine too large for the child in order to save the expense of a new one the following year, the result being that both the weight and the power needed to propel it are in excess of the child's abilities. Moderate riding on a proper wheel need not, however, be forbidden. For older boys and girls there is probably not the same danger, though intelligent supervision is never harmful, and especially watchfulness for

incipient harm is advisable with girls about the time of puberty. Even at this time the bicycle may do good by drawing a too studious or house loving youth or maiden into the open air and active exercise, and the writer has in mind two cases, one fourteen, the other eighteen, where a decided increase in height, and especially in length of lower limb, can be fairly attributed, he thinks, to bicycle riding within the last year or two.'

Dr. Monin writes, 'The cycle strongly accelerates the respiration and circulation, makes the joints supple, and develops muscle. The abdominal muscular movements caused by the working of the tricycle, exercise a kind of automatic massage, which favours the shrinking and re-absorbtion of the abdominal fat, while also overcoming constipation. In gout, diabetes, hepatic colic, and certain forms of rheumatism, organic combustion is in this way hastened, and the assimilative processes on which depend life and health become wonderfully regular.

It is strange that 'Cycling and Health' does not contain instructions for the guidance of those to whom it recommends cycling. This want I trust in some small measure to fill.

Most of us agree that exercise is necessary for health, but why is cycling specially beneficial?

Because it is not monotonous, as is, too frequently, walking. In cycling the mind as well as the body is actively employed, and, although on fairly level roads there is far less exertion than in walking, we travel with thrice the speed, whereby the number and vista of objects of interest are increased and extended. The quicker movement of the legs causes the blood to circulate more rapidly through the system purified and strengthened by the greater quantity of oxygen inhaled. It also acts as a laxative, and when perspiration is induced, many impurities are thereby thrown off through their natural channels, the pores of the skin.

Those who can walk but slowly are often prescribed carriage 'exercise,' because of the more rapid movement through and greater change of air; but if the patient be well enough to mount a tricycle, he or she will gain infinitely more benefit by propelling their own conveyance over a level

road, whilst being seated the weight is naturally supported, and they avoid the fatigue which walking entails upon those who are weak or stout. Horseback riding is excellent for most people, but to me, five years ago, it was forbidden on account of its bad effect on my kidneys and hemorrhoids, whilst the latter disappeared for a time, during a course of cycling which I immediately undertook, and which had no injurious effects upon my kidneys. Mr. Moore, a well known Veterinary Surgeon writes to Dr. Jennings 'that while admitting exercise on horseback to be much more enjoyable, he is compelled to admit that cycling is greatly superior as a means of health and bodily development.'

Mr. A. J. Wilson, 'Faed,' of the *Irish Cyclist*, who although deaf, is one of the greatest practical authorities on everything pertaining to cycling, and one of our hardiest and fastest road riders, relates that cycling has made him the man he is, from a sickly and feeble youth with preternaturally pale face, short breath, weak chest and limbs. Doctors shook their heads at him after sounding with the stethoscope, and when he was 18 his office companions believed him to be in a galloping consumption. He concludes: 'my friends did all that they could to dissuade me from taking to cycling, as I was not strong enough,' but the most rabid anti-cyclist amongst them has long since come to admit that cycling has saved my life, and every member of my family is now a rider.'

Not long before I commenced Cycling I had returned in a very feeble condition from a journey to a tropical English colony where formerly my constitution had been irreparably injured by the debilitating climate and three years of chronic diarrhœa with all its attendant evils. Cured of the principal disease I arrived in England troubled by an inactive liver, sleeplessness towards morning, bad circulation causing cold feet, dyspepsia, constipation, pains around the eyelids, varicose veins, rheumatism, hemorrhoids and general debility, a tendency to catch cold without any apparent cause and to perspire at the slightest exertion. The result was a very weak condition of body for a man not yet 40 years of age. Finding medicine had but a temporary effect I

tried cycling and kept at it steadily during the winter of 1886, and the early spring of 1887, spent in and near Arcachon in the South West of France, finishing in March and April with a ten day's tour alone to Bayonne, Biarritz, St. Sebastien, in Spain, Pau, Loudres, etc. My mount was the front part of a solid tired tandem tricycle, geared to 48″, weighing, with luggage, 90 odd lbs. My daily journey was 40 to 45 miles, and I took it easy. As an instance of the good pace obtained from a low gear even on a very heavy machine, I note in my diary that I ran from St. Geours to Bayonne, just 20 miles, in exactly two hours, over spurs of the Pyrenees, the roads at first being undulating, but the latter part very hilly. The breeze was favorable.

This shows that I must have gained immensely in strength during the previous three months of steady practice, in fact all the ills above mentioned had ceased to trouble me, and I returned from my trip still more robust in health than when I started, although I got wet through twice, but without catching cold, which I attribute to my all wool clothing and to changing directly I arrived at my destination. In one case I was tired and chilled by the wind and rain, so after a hot water sponge and rub with a rough towel I got between blankets which the good old French landlady had warmed with hot-water bottles. I fell asleep at once and got up three hours afterwards to put on my clothes, which had been dried and warmed, feeling thoroughly restored.

The varicose veins which, before I began cycling, pained me at every step when I walked beyond half a mile, were felt no more, and I took walks of three or four miles without a reminder that they had existed. Months later when I stopped cycling for a time, they returned with some of the other complaints in a milder form, and doubtless would have became worse had I not driven them away by another course of cycling. Varicose veins are caused by lack of circulation through debilitated condition, frequently aggravated by too much standing, when the entire weight of the body being upon the legs, the pressure is greatest upon its veins. Now, when cycling, the body rests upon

a spring saddle, and the legs are not only relieved of its weight, but also from the pressure of the upper column of blood. The only duty therefore, for the legs to perform is by their rotary action upon the pedals to propel the body, and this action, when gently and frequently practised, naturally increases the circulation, whilst relieving the veins of the pressure, and so brings them back to a healthy condition, which hamamelis and other stuff which the great majority of doctors prescribe can never do.

Before I became a cyclist I often had very painful attacks of rheumatism, lasting for days, but now I never get any.

I have given the above brief particulars of my own case in order to assure the reader that my opinions on 'Cycling for Health,' respecting which I contributed an article to the *Graphic* in January, 1889, are founded upon three years personal experience, during which I was free from the cares of business, and diligently studied my hobby and everything in print on the subject. One of my greatest pleasures was to meet cycling doctors, or those who, like myself, had found the great value of cycling, compare notes, and obtain from them further information as to its curative powers or ameliorating effects on different diseases and ailments. Since my return to business, whenever its claims, which have been more than usually heavy, prevented me from frequently cycling a little, my health declined and nothing has restored it so much as cycling, the beneficial effect of which is far more efficacious in its action upon the liver than all the drugs for that purpose in the pharmacopœia, which were for many years poured into me by physicians in all parts of the world.

Among the complaints known by my friends and myself to have been cured or benefitted far more by cycling than by other means, are nervous prostration, dyspepsia, liver diseases, insomnia, constipation, hemorrhoids, varicose veins, rheumatism, gout, anæmia, melancholia where there is no chronic disorder of the brain, lassitude, loss of appetite, cold feet, itching of the skin, particularly of the legs, caused by imperfect circulation, general debility and lack of muscular power.

Cycling, like medicine, must be taken with regularity and in doses suitable to the complaint. The following prescription, which has in most of the above cases been found effectual must therefore be considered as general, and where no decided benefit is derived after following it for a month, a Cycling Doctor should be consulted. I can recommend Dr. Gutteridge, 58, Brook Street, London, W.; Dr. B. W. Richardson, Manchester Square, London, W.; Dr. Ward, of Harrowgate; and Dr. S. Brooks, of 25, Peachey Terrace, Nottingham. In other places the Consul of that excellent institution, the Cyclists Touring Club will inform you.

The first thing in the morning on rising put on slippers,—lined advisable,—to prevent the feet from getting cold, and sponge the body and limbs with cold salt water, rubbing briskly till dry with a rough towel.

To commence by putting the face in a basin of cold fresh water, opening the eyes, turning a little so that the ears may be wetted, and then sponging the neck, throat, and chest thoroughly, is best, but I leave it to the option of those who dislike cold water.

If the weather be very cold, and through your debilitated condition, you feel the shock of the cold water too much, take the chill off it.

What is the good of so much cold water? It is an excellent tonic, and a few applications make all those who use it, feel directly afterwards, fifty per cent. better. Should going out on an empty stomach agree with you, by all means take the air for a little while before breakfast, but this does not agree with me, nor with Mr. Zimmerman. At breakfast let someone else have all the pork pies, tinned meats and other indigestible things while you eat and drink what experience has shown best suits you.

At 11 and 3 each day ride for about a mile on the level road, and if you arrive at home in a gentle glow so much the better, but be sure to go into a warm room.

You will often be obliged to exert considerable will power to get your legs to carry you to your cycle for a

constitutional ride when an inactive liver and its attendant bad spirits are falsely telling you how much better off you are in your comfortable arm chair. Yet that is the very time when, as 'Cleopatra' says, 'a good ride is the best invigorator; bad temper, depressed spirits, disappear like snow before the sun, and you feel at peace with all mankind. Petty cares and troubles pass away and you are thankful to live.'

To perspire freely by the more rapid movement of the legs towards the end of the run, not by hard work in hill climbing, has an excellent effect on most people in poor health, if they change their clothing at once (all wool understood), sponge with warm water, get well rubbed, and then lie down for a rest. Be careful when heated not to remain still in the open air, or in a room that is not warm without an extra wrap, or you will assuredly catch cold, to which everyone in a debilitated condition is so liable, often without apparent cause. Your only defence is, not by muffling up at home to avoid draughts, but by going frequently into the open air to accustom and harden your body to frequent changes of temperature.

In two or three days gradually increase the distance cycled, as you find that practice enables you to do so without more fatigue, but avoid going too far. If the tired feeling does not wear off after a short rest you have overdone it. Cycle in company whenever possible, and to as many new points of interest as you can. When practice and an improvement in health have enabled you to ride 20 miles per day, take advantage of the first favourable weather to go for a few days tour, entire change of air and scene being great restoratives. At such a time the companionship of a friend who will suit himself to your pace will be doubly dear and beneficial to you in mind and body. Walk all hills and rest very frequently, doing all you can to avoid fatigue. In short, draw as little as possible on your reserve force. Do not mount your cycle until two hours after the mid-day meal. Exercise interferes with digestion. "Forty Winks" will promote it and be generally beneficial. Afternoon tea is most enjoyable, but it is very bad for the

majority of those cycling for health. Should the roads be bad or the wind contrary, do not hesitate to shorten the distance, and never be tempted into that infatuation of cyclists—trying how many miles you can ride in an hour or a day. Mischief is thus done which can never be repaired. See Drink and Diet.

Men of delicate constitutions who follow sedentary occupations will add years to their lives if they ride to and from business, or part way there and back, when it can be done without great exertion.

Ride a fairly light machine and see that it is fitted with a low gear, say from 44 to 48 for tricycles, and as high as 54 for safeties, one that you can drive without exertion on a level road.

Do not give up cycling during the winter, but when the weather is too bad take some other exercise at the usual hour. Clubs, not exceeding 4-lbs. each, and dumb-bells, 2-lbs. each, are excellent. Heavy ones are injurious. The longer you can swing them without much fatigue the greater the benefit derived. A really good Home Trainer will be of immense assistance in keeping you in practice at such a time, as only those who are in robust health remain "fit" long.

Turkish Baths once or twice a week about two hours after breakfast always have a good effect, do not stay long in the hot room, and finish with a cold shower, not the plunge bath.

Flannel or "Jaeger" belts for day and night wear aid digestion.

Different complaints require different treatment, but for people suffering from those before named, three meals a day only are generally advisable, but some sleep better by having "a bite" just before retiring. Avoid fat, oil, and pastry. Eat slowly, drink moderately, the less with your food the better. Digestion is in many cases improved by not drinking until just after eating, or between meals.

It is noticeable that most stout persons drink a great deal, and until this habit is firmly combated and overcome, cycling can have but little effect upon them. When suffering from thirst, gargle the throat, and then swallow a few

drops only. For many reasons ride with your mouth shut.

It is popularly supposed that in the tropics it is too hot for cycling. This is a mistake, for it is an undoubted fact that in such countries Europeans whose business requires them to be going about continually in the heat of the day enjoy better health than those of the community who have office work. Also that since lawn tennis came into vogue ladies who reside in the far East are much healthier.

The moist tropical heat which never imparts a ruddy glow to the cheeks, but blanches them, makes the English resident perspire without exertion, clogging the pores with matter as it slowly oozes through them, making one feel languid and tired. A ride in the early morning, or just before sunset, quickly dispels this feeling, the natural and healthy perspiration caused thereby clearing the pores of the accumulated matter, stirring up the liver, and keeping the skin in a healthy condition.

To avoid frequent repetition, I must ask those for whom this article on Cycling for Health is specially written, to study other parts of the book, in which they will find Points on Clothing, &c., which should be carefully followed, for it is only by constant attention to details, and persistence for several weeks, and in some cases months, in steady cycling, that chronic complaints can be cured.

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New York Athletic Club.

The RALEIGH having been ridden faster in competition than any other machine, viz., ½-mile from scratch in 1m. 1⅘secs., at Hartford, September 6th, 1892, and the last ¼-mile in 27 secs., or at the rate of 33 miles 586 yds. per hour, it is in cycling parlance

THE FASTEST MACHINE IN THE WORLD.

RALEIGH

ROADSTERS are equally **FAMOUS** for **LIGHTNESS, ELEGANCE, EASY RUNNING** and **DURABILITY.**

E" Pattern with DUNLOP DETACHABLE TIRES. Weight 35-lbs.

RALEIGH SPECIALITIES FITTED TO THIS MACHINE.

Patent easy running Bearings.

Patent Changeable Gear which cannot get out of order, enabling any novice to change his sprocket wheel in five minutes and so speed the machine up or down as demanded by the state of the rider's health, or the roads he intends to travel.

Semi-Tangent Spokes to Driving Wheel; these combine the good qualities of both systems and do not break or work loose for years.

Patent light wire Mudguards with rubber cloth covers and a large piece of leather at the bottom of the front guard, (not shewn in illustration) which effectually protects the feet and chain. All are easily detached in fine weather, or the covers only may be rolled up and put in the satchel when the wires offer no resistance to the wind.

Raleigh barrel centred ball Rubber or Rat-trap Pedals as ordered (Rubber recommended).

We make a number of patterns in SAFETIES, TANDEM SAFETIES, TRICYCLES and FRONT DRIVERS.

PRICES TO SUIT ALL, EXCEPT BUYERS OF RUBBISH.

MACHINES FITTED WITH CARTER'S OR OUR OWN GEAR CASE.

ILLUSTRATED CATALOGUES,
and quotations for style of bicycle desired, **post free.**

SOLE AGENCIES IN ALL PARTS OF THE WORLD.

THE RALEIGH CYCLE CO., LTD., NOTTINGHAM, ENG.

American Factory and Offices:
Bank and Greenwich Streets, NEW YORK.

WE SIMPLY POINT

To the fact that

2,300 PRIZES

were won, and the following **7 RIDERS** became

NATIONAL CHAMPIONS

of their respective countries during 1892 on RALEIGHS, as proofs of the remarkable speed qualities of our Cycles, whether Roadsters or Racers, results produced by our

PATENT EASY RUNNING BEARINGS

which cannot be copied.

Signor Luigi Cantu	...	Champion of Italy.
Signor G. Ruscelli	...	Champion des Juniors of Italy.
Herr. A. Gericke	...	Champion de vitesse of Austria.
Herr. W. Friedrich	...	Champion de resistance of Austria.
Mr. S. Lenton	...	Champion (50 Miles) of Wales.
Mr. J. D. Celliers	...	Champion of South Africa,
Mr. A. A. Zimmerman	...	Champion of England & America.

ALL THE ABOVE NAMED CHAMPIONS USED DUNLOP TIRES.

Note.—With the exception of the Raleigh ridden by Mr. Zimmerman, all the others rode standard pattern Raleighs from stock, purchased in the ordinary way of business.

Is not that

STRIKING TESTIMONY

for the all-round excellence of workmanship and material in

"RALEIGHS."

Old Saw: Hard to beat—A bad egg.

Modern Saying: Impossible to beat—"The Raleigh."

SEE THE TWO PRECEDING PAGES.

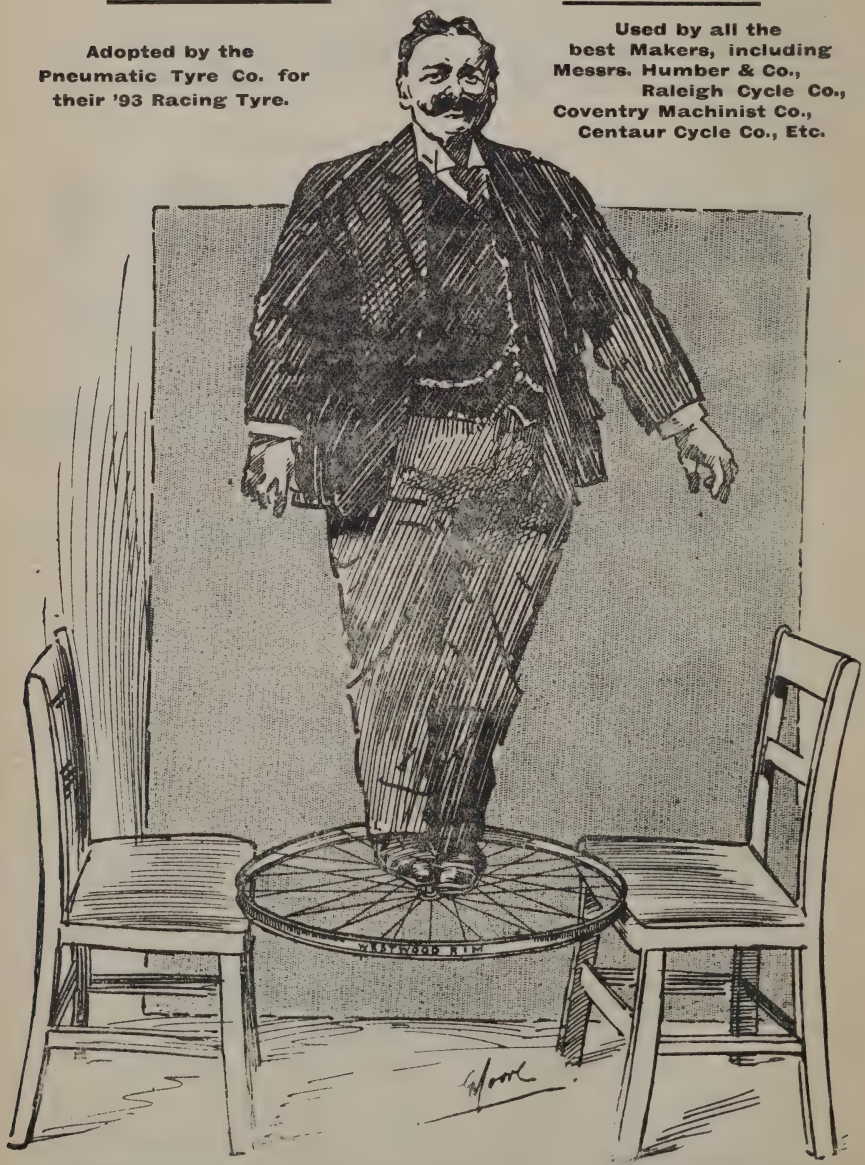
THE STRONGEST WHEEL IN THE WORLD is made from

THE WESTWOOD DOUBLE HOLLOW RIM.

WHEEL 26-OZS. *VERSUS* MAN 226-LBS.

Adopted by the Pneumatic Tyre Co. for their '93 Racing Tyre.

Used by all the best Makers, including Messrs. Humber & Co., Raleigh Cycle Co., Coventry Machinist Co., Centaur Cycle Co., Etc.



WESTWOOD WHEEL CO., LTD., BIRMINGHAM.

THAT'S THE LAMP

FOR

"LITO"
BELL-ROCK.

QUALITY.

UTILITY.

ORIGINALITY.

DURABILITY.

SCORCHER.

TOURING.

LIGHT.

12 months ahead of all others.

LISTS FREE FROM

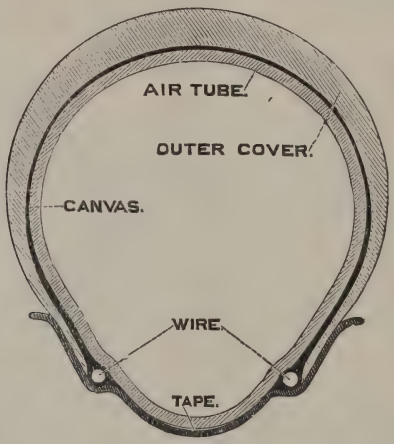
H. MILLER & Co.,

MILLER STREET,

BIRMINGHAM, ENGLAND

AGENTS:—THE RALEIGH CYCLE CO., Ltd.,
Bank and Greenwich Streets, NEW YORK.

No other Pneumatic Tyre has ever won an
English Championship.



'To American Dunlop Tire Co.

I used your tires while abroad and won the English Championships on them, and also broke records on them.

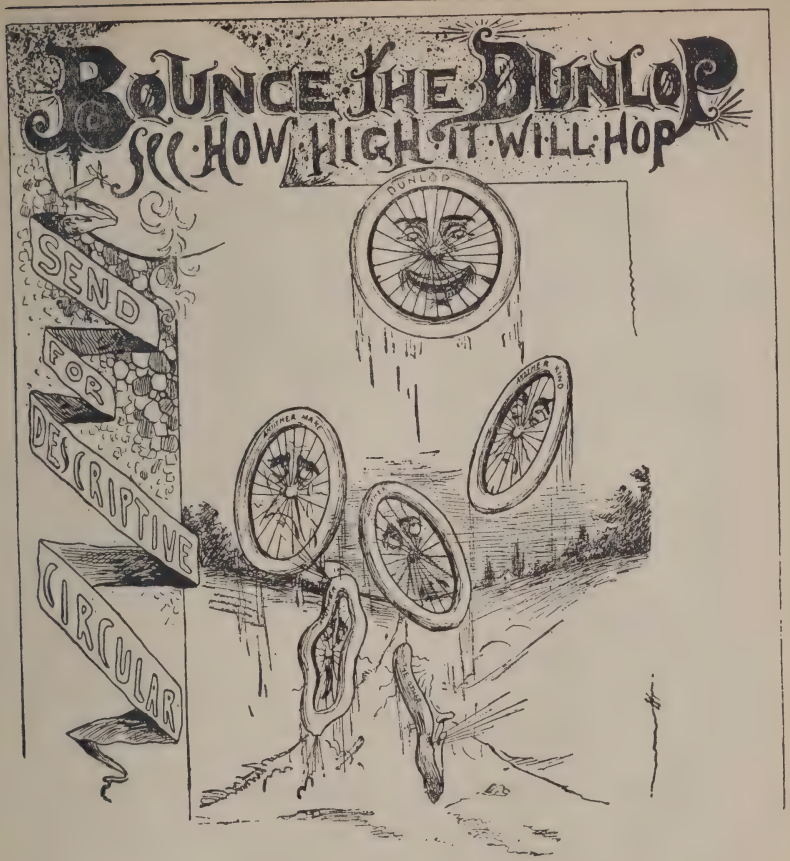
Yours truly,

A. A. ZIMMERMAN.''

The Dunlop Tyre Costs a little more, but . . . . !

THE AMERICAN DUNLOP TIRE CO.,

160, FIFTH AVENUE, NEW YORK.



Dunlop Detachable Tyres

ARE MADE BY

PNEUMATIC TYRE & BOOTH'S CYCLE AGENCY,

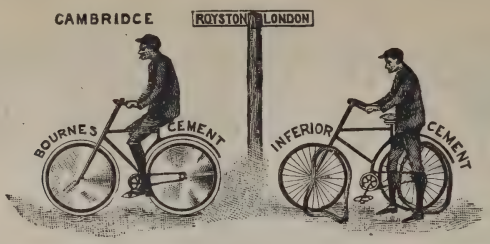
LIMITED.

Oriel House, Dublin. 160, Clerkenwell Road, London.
Coventry, Birmingham and Belfast.

AMERICAN DUNLOP TIRE CO., 160, FIFTH AVENUE, NEW YORK CITY, U.S.A.

THE DUNLOP PNEUMATIC TYRE, 11, RUE BRUNEL, PARIS.

DUNLOP TYRE CO., BRUCHKOBLERLANDSTRASSE, 40, HANAU, GERMANY.



BOURNE INNES CYCLE TYRE CEMENT.

A first-class Cement for attaching the Rubbers in Bicycle, Tricycle, and Perambulator Wheels.

Its adhesive properties are of the highest order, uniting the various substances to which it is applied with extreme tenacity.

The best proof of the superior quality is the fact that it is being very extensively used in the British Isles, over the Continent of Europe, and the United States of America.

MANUFACTURERS:

G. H. INNES & CO., ROYSTON, Cambs.

WILLIAM · GAY,

General Japan Transfer Printer.

TRANSFERS FOR

RAILWAY CARRIAGES, CABS, SEWING MACHINES, TYPEWRITERS, BEDSTEADS TRAYS, COAL VASES, AND ALL ARTICLES REQUIRING DECORATION.

☞ **FLOWERS AND LANDSCAPES IN GREAT VARIETY.** ☜

Makes a Speciality of **CYCLE TRANSFERS** of all Descriptions.

SAMPLES FREE ON APPLICATION.

WILLIAM GAY, CITY TRANSFER WORKS,

Gough Street and Washington Street,

BIRMINGHAM, ENGLAND.

Largest Manufacturer in the World, as can be seen by reading through a few of his largest consumers of transfers;—

RALEIGH CO.
Messrs. RUDGE & Co.
,, HUMBER & Co.
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And thousands of others.

'Tis an Age of Progress !

AND

THE RUDGE LEADS ! !

No need to ask the reason !
No need to make reply ! !

Everyone knows that the HIGH and ENVIABLE REPUTATION of the

RUDGE CYCLES

IS AS

Wide as the World.

Recent arrangements and the installation of Mr. R. L. PHILPOT as General Manager, and Mr. W. RADFORD as Works Manager and Designer, will place these Celebrated Machines higher in public estimation than ever.

Apply for a Copy of "CYCLING MADE EASY," just published.—POST FREE.

THE RUDGE CYCLE CO., LIMITED,

WORKS: COVENTRY.

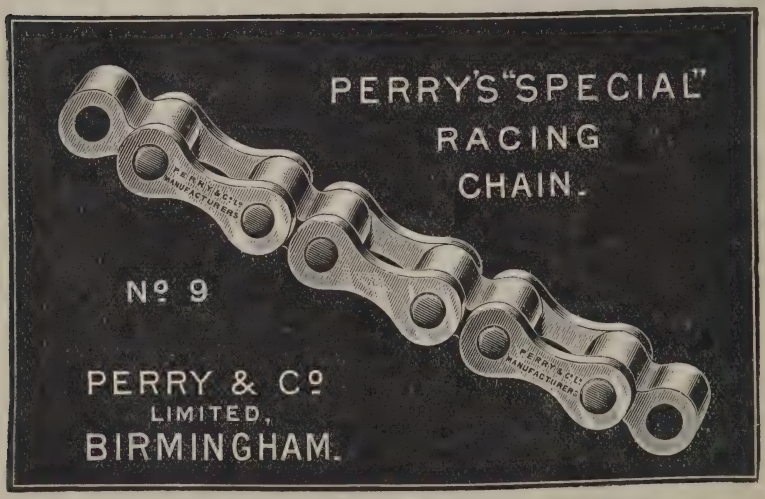
LONDON DEPOT: **23, HOLBORN VIADUCT, E.C.**

PERRY'S

WORLD RENOWNED

CHAINS

AS USED BY ZIMMERMAN AND ALL THE GREAT RIDERS.



PERRY'S FEATHERWEIGHT RACING PEDALS.

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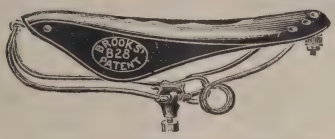
PERRY'S UNEQUALLED FITTINGS.

BROOKS' SADDLES

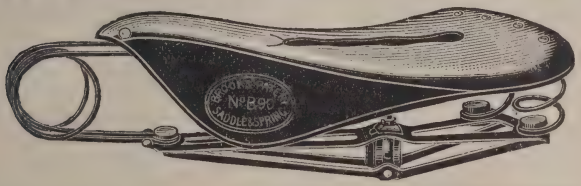
For ease, comfort, and convenience; for lightness with strength and durability.



LIGHT "SCORCHER" SADDLE.

For correct mechanical action and design, and for careful attention to detail.

EXCEL ALL OTHERS.



B 90, ROADSTER. B 91, SEMI-RACER. B 92, LIGHT SCORCHER.

SEE THAT YOU GET THEM.

B 19. "SPEEDWELL" RACING SADDLES. B 17.

THE AMATEUR CHAMPION OF ENGLAND AND AMERICA WRITES:—

Gentlemen,

I have used your racing saddles and no others ever since I began safety racing, and therefore I need not add that they have given me entire satisfaction.

A. A. ZIMMERMAN.

May 1st, 1893.

ILLUSTRATED LIST ON RECEIPT OF APPLICATION.

J. B. BROOKS & CO.,

CRITERION WORKS,
GREAT CHARLES STREET, BIRMINGHAM.
ENGLAND.

Do You Know the Recorder

PRINTS

Cycle News Every Day?

Full account of all the races the next day after they have been run.

Red Bank, N. J., February 23, 1893.

Dear Mr. Editor, Bicycle News.

"I am a subscriber, and in fact all the cyclers in this locality are subscribers, to the valuable Recorder. As Mr. Zimmerman, the champion bicyclist of the world, has started on his '93 racing tour, we trust you will follow him and give us an account of every race he enters. Follow the other cracks also, for we jump every morning first thing for Cycle News of the Day, especially Zimmy since left for Savannah. Your account of the Savannah races was good, and we trust you will, through your valuable paper, keep us informed on all the other races and tournaments.

Yours Gratefully,

RED BANK CYCLERS,
"Per Anson S. Monroe."

The New York Recorder

Is the Only Daily Cycle Paper.

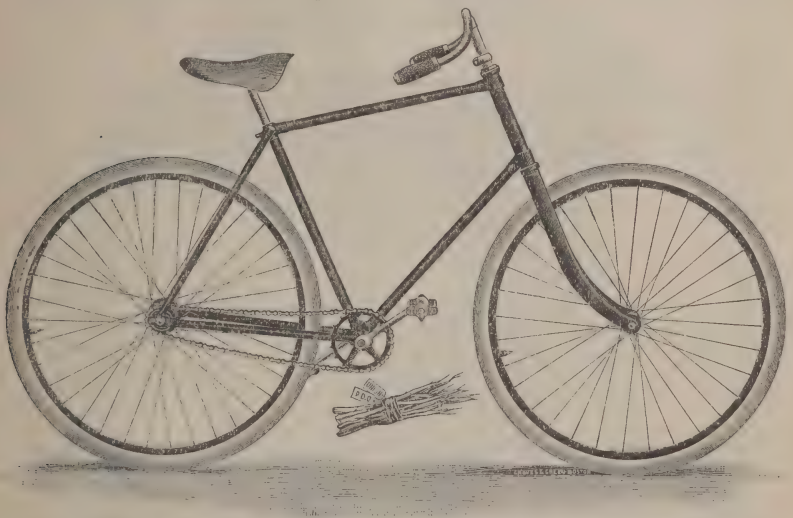
2c Daily. 5c Sunday. $8.50 per Year.

Send Fifty cents for one month's trial.

15, Spruce St., New York City.

EVERYBODY READS UNION ADS.

"Time was when we joined the cry for lighter machines. It was needed then, and makers were gradually convinced of the fact. Now, however, the craze for lightweights is on the part of the makers. The effort seems to be who can turn out the lightest. Can it be fairly argued that the very light machines exhibited on many stands at the Stanley Show were called for by riders? Never! Riders were more than astonished to find to what extremes the craze could be carried."—*Scottish Cyclist.*



There is no doubt that the day of judgment is at hand for light weight bicycles. It may be that the 26 pound full roadster advertised by Fracture & Smash is listed at catalogue weight, which must never be confounded with actual weight.

All you need do when purchasing, is ask yourself: Is this a "green" wheel? (i. e., its first season). What record for good workmanship have Fracture & Smash? Does the agent urge me to buy it in preference to the ——— or the ———? If so, his little *G. W. axe is blunt and he wants to grind it. Don't let him grind it on you. Insist on having a reputable mount with reputable tires and don't let him talk you out of it or you will regret it with sweat upon your brow, especially if your mind is set upon having a P. D. Q. Union. Oh, but it's a dandy with no discount. Catalogues ready.

UNION CYCLE MFG. CO.,

166 and 170 Columbus Ave., Boston, Mass.

*George Washington.

Leading Wheel Papers of America.

The Wheel
CYCLING TRADE REVIEW

THE SPORTING LIFE,

. . . PUBLISHED WEEKLY AT . . .

No. 34, SOUTH THIRD STREET, PHILADA.

. . . BY THE . . .

SPORTING LIFE PUBLISHING COMPANY.

The Referee
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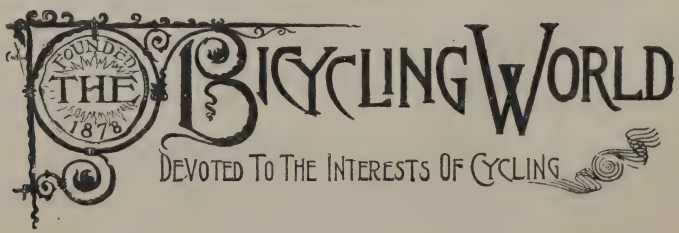

Zimmerman

HAS NEVER RIDDEN A MONARCH

And that Accounts for his Never Having Ridden

A MILE IN TWO MINUTES.

Monarchs are the best that money can produce. Not an ounce of cast metal in their construction. Every part a scientific production, from the finest material obtainable FOUR STYLES—Proper weights, Popular designs, and Elegant finish. The Grandest Ladies' Wheel in the American market. Send for our 1893 catalogue.

MONARCH CYCLE CO., 42, 44, 46, 48, 50 & 52 N. Halsted St., CHICAGO.

Sidney B. Bowman,

944 Eighth Avenue,
Corner 56th Street, *New York City,*

Sole Uptown Agent.

Columbias

AND

Hartfords.

Sundries, Renting and Repairing.

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Literature.

EVERY CYCLING PAPER, PERIODICAL AND HAND BOOK ISSUED,

FOR SALE AT ME,

"FLETCHER,"

The Cycling News Dealer,

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Day Storage for Bicycles.

JOSEPH MCDERMOTT,

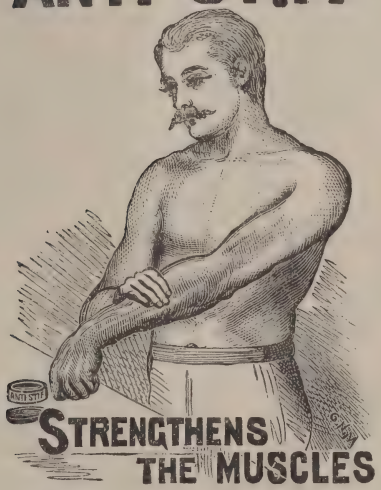
Attorney at Law,

Titles examined and abstracts furnished at short notice.

Freehold, N. J.

Athletes, Cyclists, Baseball and Footballists
Horseback Riders, Boxers and Oarsmen;

ANTI-STIFF



A marvelous preparation!

Quick in its action, clean and pleasant to use.

Rub well into the muscles each night, and in a short time you will be convinced of its strengthening and stimulating properties.

Prices 20c. and 35c. per box; trainer's size, $1.

E. FOUGERA & CO., Agents for U. S., 30 N. William St., N. Y.

LOVELL DIAMOND CYCLES.

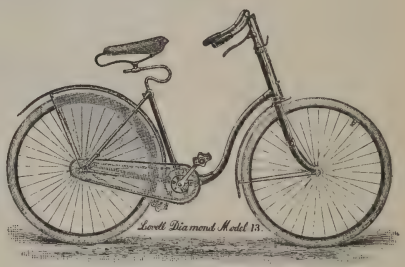
Highest Grade. Lowest Prices.

LEADING POINTS:

HUMBER FRAME,
COLUMBIA PNEUMATIC TIRES,
SEAMLESS STEEL TUBING,
STEEL DROP FORGINGS,
BALL BEARING THROUGHOUT,
TEN INCH STEARING HEAD,
LONG WHEEL BASE.

Warranted in Every Respect.

For Gentlemen.



For Ladies.

Pneumatic Tires, $85.00 $100.00 $115.00
Cushion Tires, $75.00 $90.00 $105.00

We Carry in Stock the Largest and Finest Line of BICYCLES FIRE ARMS and SPORTING GOODS IN AMERICA.

Cycle Catalogue Free. Agents wanted.

John P. Lovell Arms Co.,
Boston, Mass.

Cleveland Pneumatic Tire.

Lightest, Most Resilient and Swiftest Tire yet made.

The Cleveland Tire is the tire we ride.
It fills our hearts with joy and pride.
We're never left five miles from town
On a country road when the sun is down ;
In case of puncture we're scarce delayed,
So quickly can repairs be made ;
But light and swift and free we spin ;
On the Cleveland Tire we're sure to win.
Try this Tire, and we know you'll say:
"I'll ride the Cleveland, come what may."

Cleveland Light Roadster. Weight : 30 lbs.

Cleveland Racer. Weight: 21 lbs.

CLEVELAND TIRE.

USED WITH

CLEVELAND RIM.

NEW "I. C." VALVE.

PERMANENT REPAIRS IN LESS THAN TWO MINUTES.

"Compressed air makes the finest spring
If not ruined in the covering."

Our covering is a THREAD construction, causing the internal pressure of the air to act quickly and forcibly on all obstructions. COASTS better by far than any other tire. Catalogue on application.

H. A. LOZIER & CO., Cleveland, Ohio.

COLUMBIAS

BOTH · BICYCLES · AND · TIRES,

HOLD THE WORLD'S RECORDS

FOR

COMPETITION.

DISTANCE.	NAME.	PLACE.	TIME.
¼ Mile, Standing Start,	G. C. Smith,	Hartford, Sept. 6, '92,	:31⅘
¾ " " "	Geo. F. Taylor	Springfield, " 15, '92,	1:41⅕
1 " " "	Geo. F. Taylor	Springfield, " 15, '92,	2:15⅖

AGAINST TIME.

¼ Mile, Standing,	Geo. F. Taylor	Hartford, July 5, '92,	:32⅕
½ " "	W. W. Windle	Springfield, Oct. 8, '92,	1:03⅕
¾ " "	W. W. Windle	Springfield, Oct. 8, '92,	1:34
1 " "	W. W. Windle	Springfield, Oct. 8, '92,	2:05⅖
2 " "	W. W. Windle	Springfield, Sept. 30, '92,	4:28⅘
3 " "	W. W. Windle	Springfield, Sept. 29, '92,	7:04⅘
4 " "	W. W. Windle	Springfield, Sept. 29, '92,	9:26⅗
5 " "	W. W. Windle	Springfield, Sept. 29, '92,	11:41

Hoyland Smith holds World's Records for 6, 7, 8, 9 and 10 miles standing start, Hartford, July 5, 1892.

FLYING START (AGAINST TIME).

½ Mile	W. W. Windle	Springfield, Oct. 8, '92,	:57⅘
¾ "	W. W. Windle	Springfield, Oct. 7, '92,	1:30⅕
1 "	W. W. Windle	Springfield, Oct. 7, '92,	2:02⅗

One Mile L.A.W. Championship Winners.

DATE.	NAME.	PLACE.	TIME.
1892, July 20,	Geo. F. Taylor	Washington D.C.	2:40

LONG DISTANCE TRACK.

TIME.	NAME.	DATE.	DISTANCE.
1 hour	Hoyland Smith,	Hartford, July 5, '92	23 Miles, 755 Yards.

25-MILE TRACK RECORD.

NAME.	DATE.	TIME.
Hoyland Smith	Hartford, July 5, '92	64:05⅕

ROAD RECORDS.

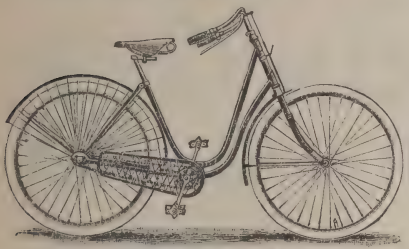
DISTANCE.	NAME.	DATE.	TIME.
10 Miles	Hoyland Smith	Irvington Milburn, May 30, '92,	29:42
15 "	Hoyland Smith	Irvington Milburn, May 30, '92,	45:32
20 "	Hoyland Smith	Irvington Milburn, May 30, '92,	1:00:59
25 "	Hoyland Smith	Irvington Milburn, May 30, '92,	1:17:11

POPE MFG. CO.,

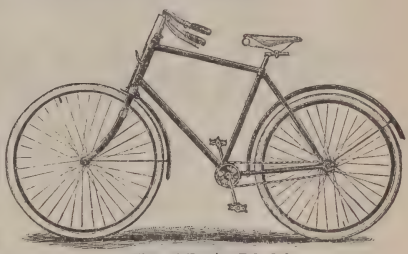
BOSTON CHICAGO NEW YORK HARTFORD

GENDRON CYCLES

FOR 1893 WARRANTED TO BE THE HIGHEST CLASS OF WORK, IN THE STRICTEST SENSE.

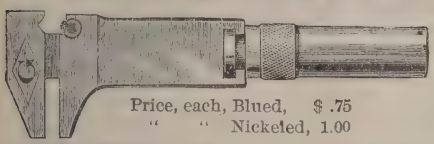


No. 14, Price, $150.00



No. 15, $150.00

THE DIAMOND CYCLE WRENCH



Price, each, Blued, $ .75
" " Nickeled, 1.00

LIGHTEST! NEATEST! STRONGEST!
AND COMBINED WITH IT
A PERFECT SPOKE GRIP!

CATALOGUE FREE.

Gendron Iron Wheel Co.,
Toledo, Ohio.

NEW YORK, 358 and 360 Broome St.
CHICAGO, 68 and 70 So. Canal St.
ST. LOUIS, 604 South 7th St.

Leland Hotel Co.,

OPERATING

Hotel Oglethorpe,

Brunswick, Georgia.

The finest place in the South to train in the Early Spring.

HOTEL AVENEL, - - Long Branch, N. J.

"QUALITY UNEXCELLED."

B. & G. SHORTHOUSE.

MANUFACTURERS OF THE

"PARAGON"

COLD DRAWN

WELDLESS STEEL TUBES

FOR HIGH-GRADE

CYCLES.

Also for BOILERS & ENGINEERING PURPOSES GENERALLY.

Brass Solder for Cycle Work.

(IN STRIPS OR GRAINS.)

Also Manufacturers of ROLLED BRASS, BRASS & COPPER SHEETS, WIRE AND TUBES, CARTRIDGE and other Metals.

CABLE ADDRESS :— **A. B. C. CODE.**

SHORTHOUSE, BIRMINGHAM, ENG.

SPRING HILL MILLS. ESTABLISHED 1851.

The Good Hartford.

One thing is certain, the Hartford is a good machine. It is as light as it can consistently be, as strong as the best material can make it, as handsome as any one wants it to be, with the long wear of excellence in it---a thoroughly first-class machine, appreciated by experts as well as by road riders---a machine warranted with an unquestionable guarantee.

Have you a Hartford catalogue? You'd better have one, it's worth keeping on file. It's yours for a postal card.

Hartford Cycle Co.,
Hartford, Conn.

The Championships of France

Were won last year on wheels fitted with the Celebrated

FRENCH TIRE.

The New York Belting & Packing Co. Ltd.,

No. 15 Park Row, New York,

ARE MANUFACTURERS OF THE

BURRIS-MICHELIN,

Which without the rims is the lightest Tire in the world, and with the rims is as light as any other Tire, and much more resilient.

Champions of America and England

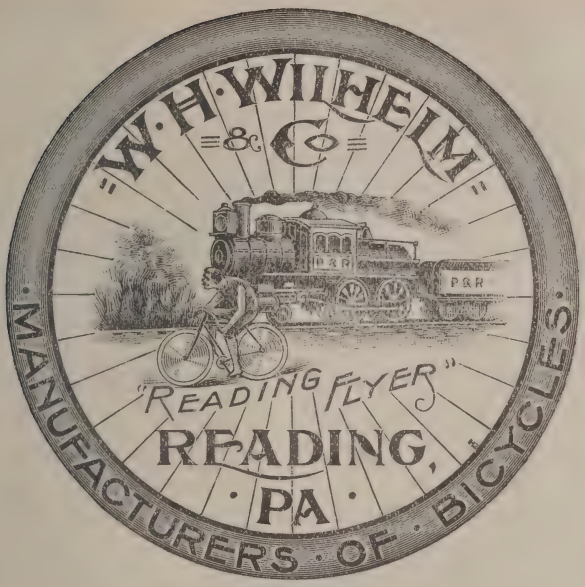
ARE ORDERING THEIR WHEELS FITTED WITH THE

BURRIS-MICHELIN, FOR 1893.

This tire will absolutely not creep. No cement is used. It is firmly bound on the rim by a simple and secure mechanical fastening. When deflated the cover cannot be removed from the rim until the bands holding it are unlocked.

THE WHIPPET TIRE,

Manufactured by the New York Belting & Packing Co. Ltd., is the best tire made in America, of the class cemented in the rim. It is made with an endless air chamber and the outer cover so formed that the air chamber can be reached and repaired in case of puncture, and constructed so that the tire cement does not come in contact with the laces.



Our Line for '93

- Reading Flyer
- Reading Road Racer
- Reading Racer
- Reading Ladies
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The most important rounds of the ladder whichl eads to victory are health, strength, speed and a clear head. Quite as important is your selection of a good mount. Strength and rigidity are paramount ; *speed* is the infallible result of lightness *when these points are not sacrificed* in the reduction of weight. Therefore, this axiom is incontestible : A proper amount of strength and rigidity being maintained, *the lightest racing machine is necessarily the fastest*. Minor, but important points, are width of tread, wheel base, position of rider, etc.

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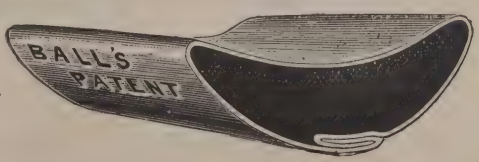

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